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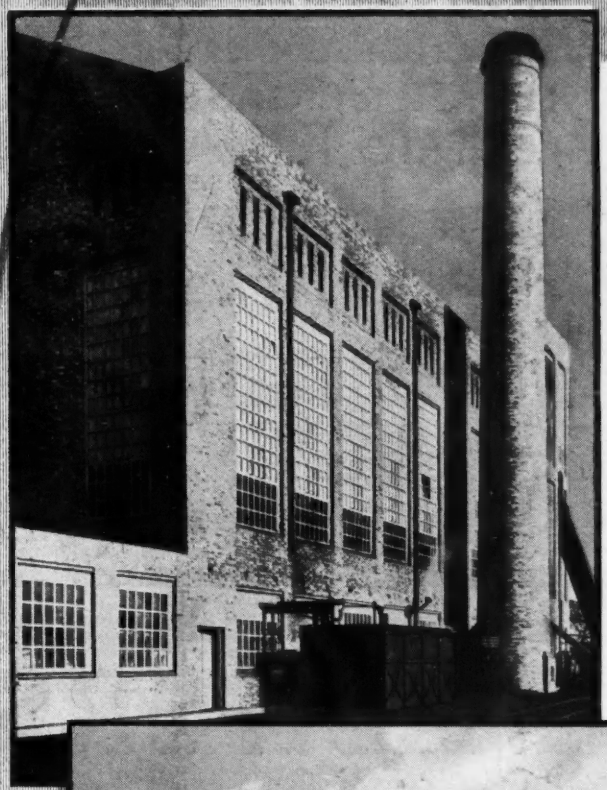

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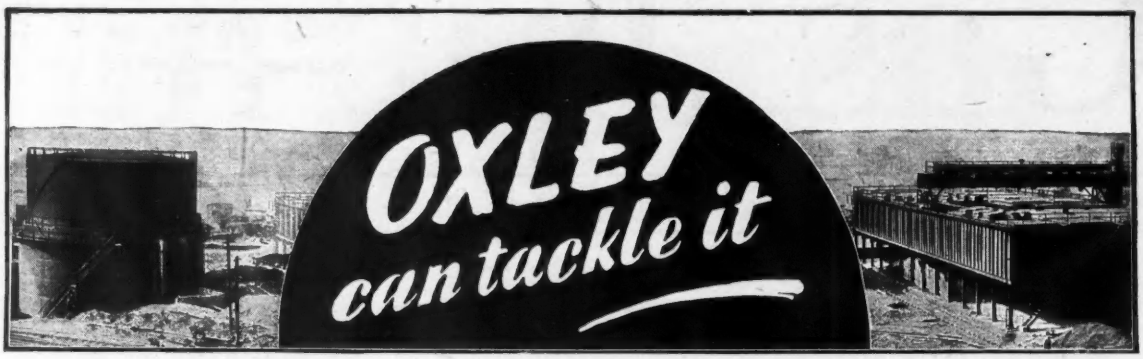

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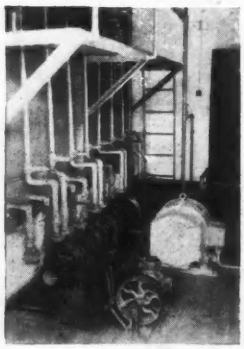

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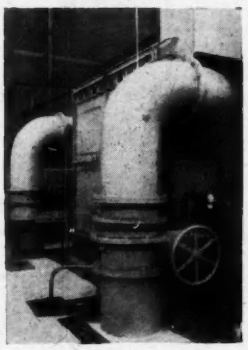

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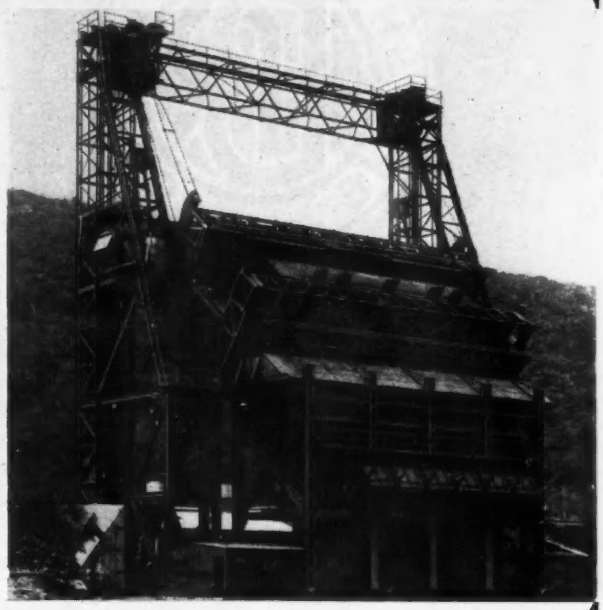

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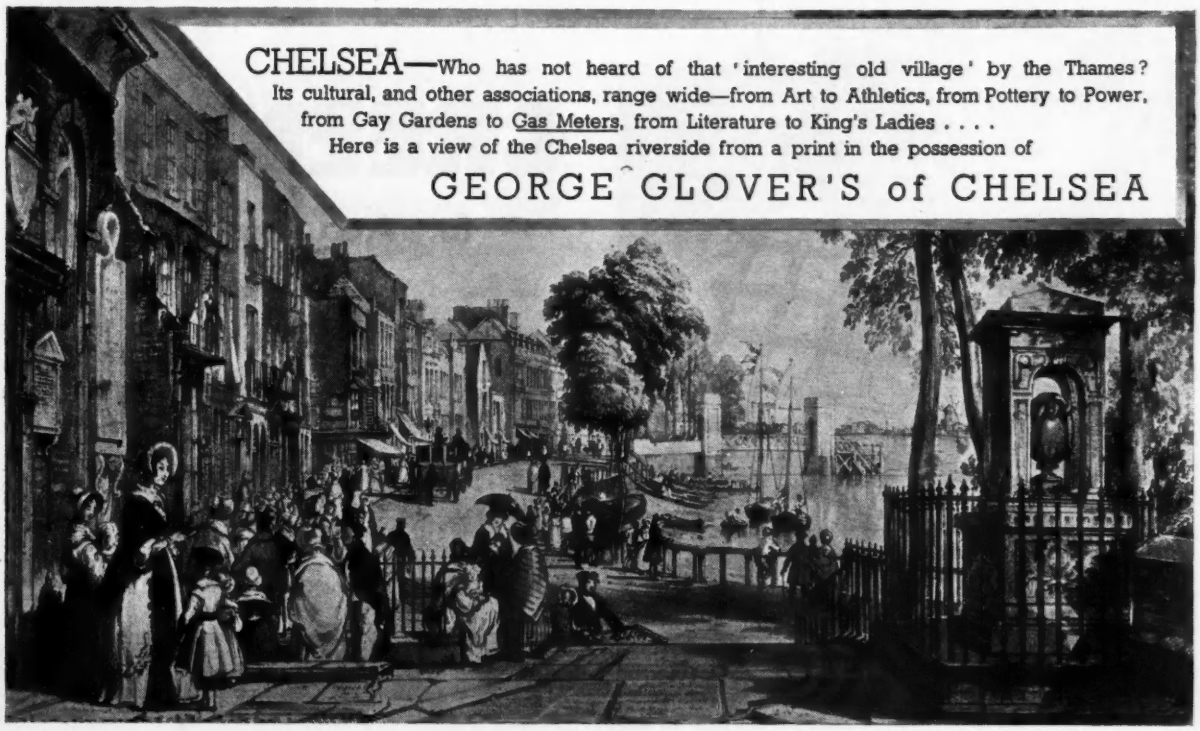

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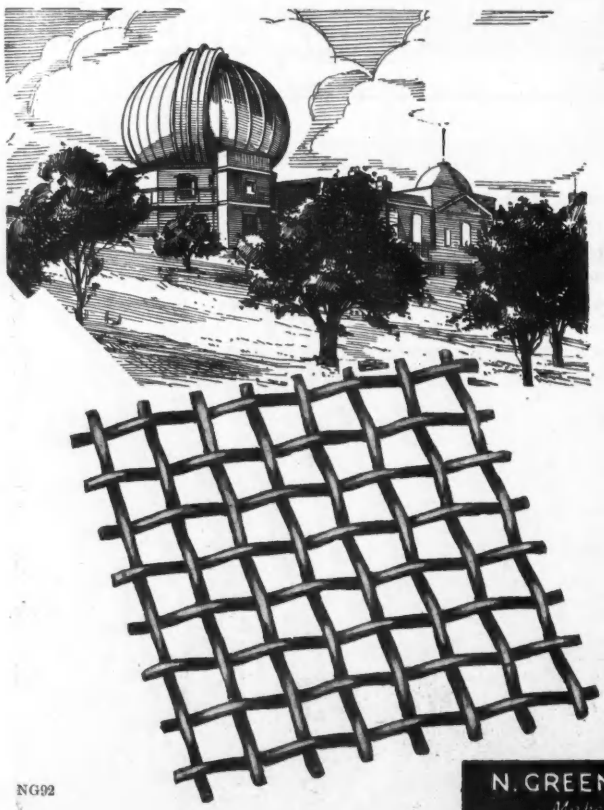

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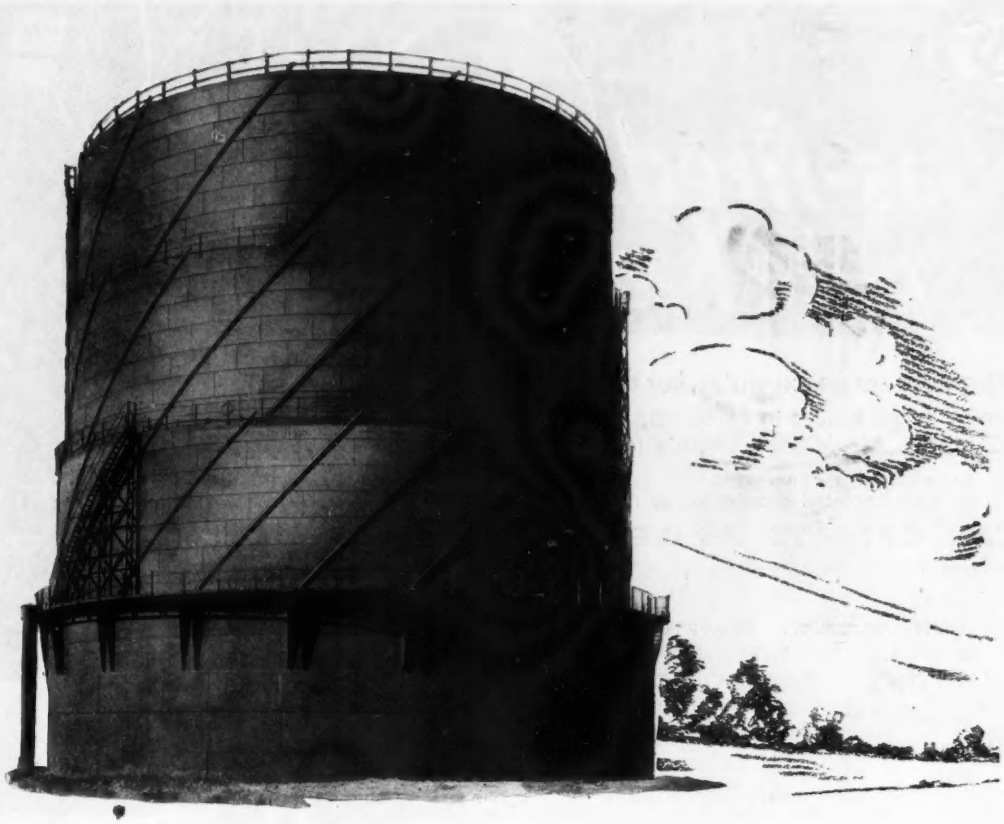

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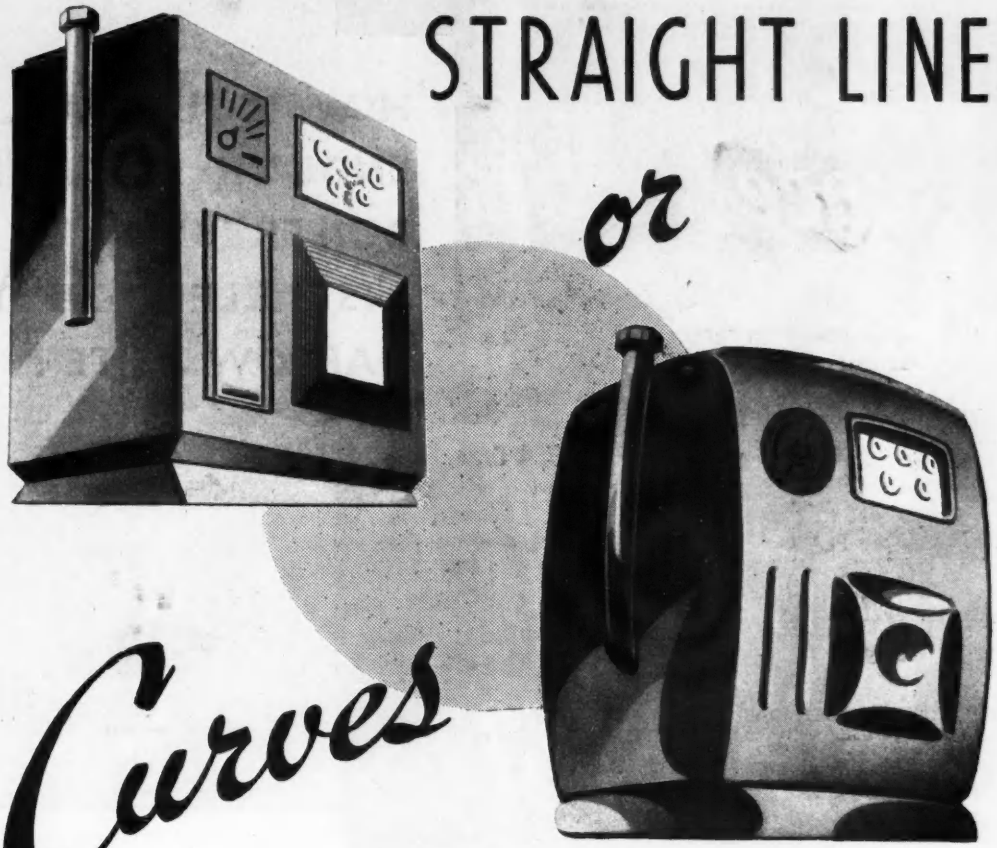

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—both find their place in design and, rightly used, both please the eye, but whatever the style and type of construction of the Gas Meter of the future, be assured that they will be correctly employed in the Wilson Meter.

Lines and Curves do not influence performance—performance influences design. We cannot, therefore, show you our post-war Meter because we have wartime commitments which prevent this. Nevertheless, our existing knowledge would easily enable us to build a meter of surpassing efficiency—whether formed of lines or curves.

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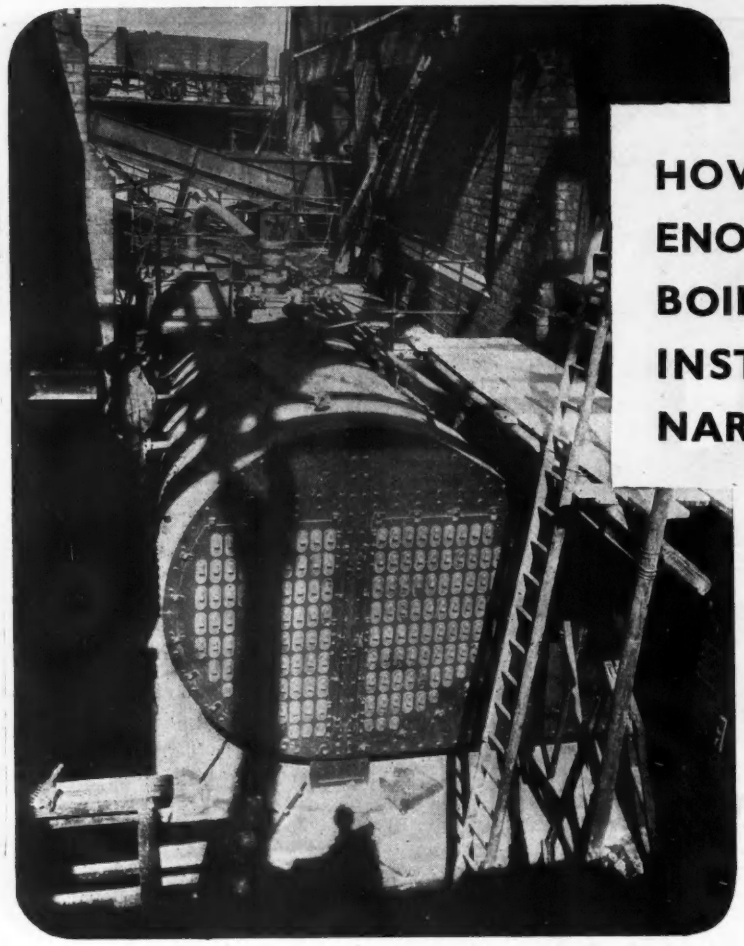

HOW COULD A LARGE ENOUGH WASTE HEAT BOILER BE INSTALLED ON THAT NARROW SITE?

RESTRICTED space presented a real problem when it was decided to utilise the waste heat from a bank of Horizontal Retorts at Cheltenham. The photograph shows how the problem was satisfactorily solved by installing a 9′ 0″ dia. Cochran "Sinuflo" Waste Heat Boiler designed for 10,000 lb. per hour. The special "Sinuflo" tube design secured the needed capacity in spite of space restrictions. If you have a boiler problem we think it might pay you, too, to consult

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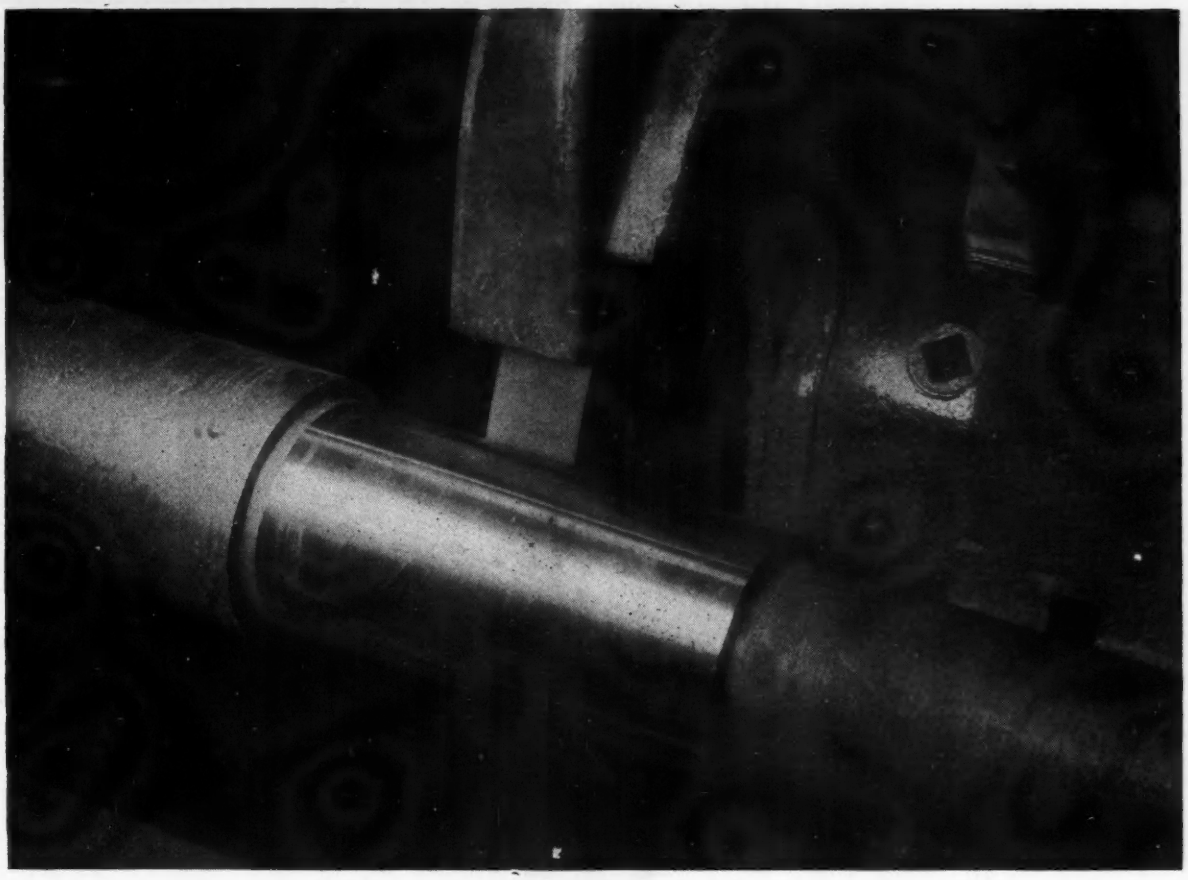

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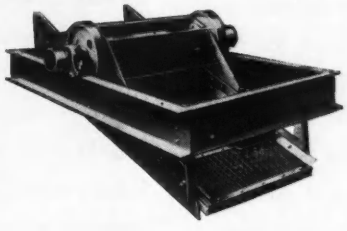
The alloy steel shaft of a Pegson-Telsmith heavy duty Vibratory Screen is ground to precision limits. That is typical of the fine workmanship which is put into every part of Pegson-Telsmith grading equipment. The high speed of the machine with the minimum of wear and tear, and its quality output, are no accident. Those characteristics are the logical result of scientific engineering in the best of material. "Every inch a screen" aptly describes Pegson-Telsmith Vibratory Screens. Their rapid vibratory action is confined to the screens themselves, every inch grading all the time. You get continuous output from every aperture of the mesh on each deck. These are the qualities that matter in terms of satisfactory output at an economic figure. That is why such fine engineering is put into every detail of Pegson-Telsmith equipment.



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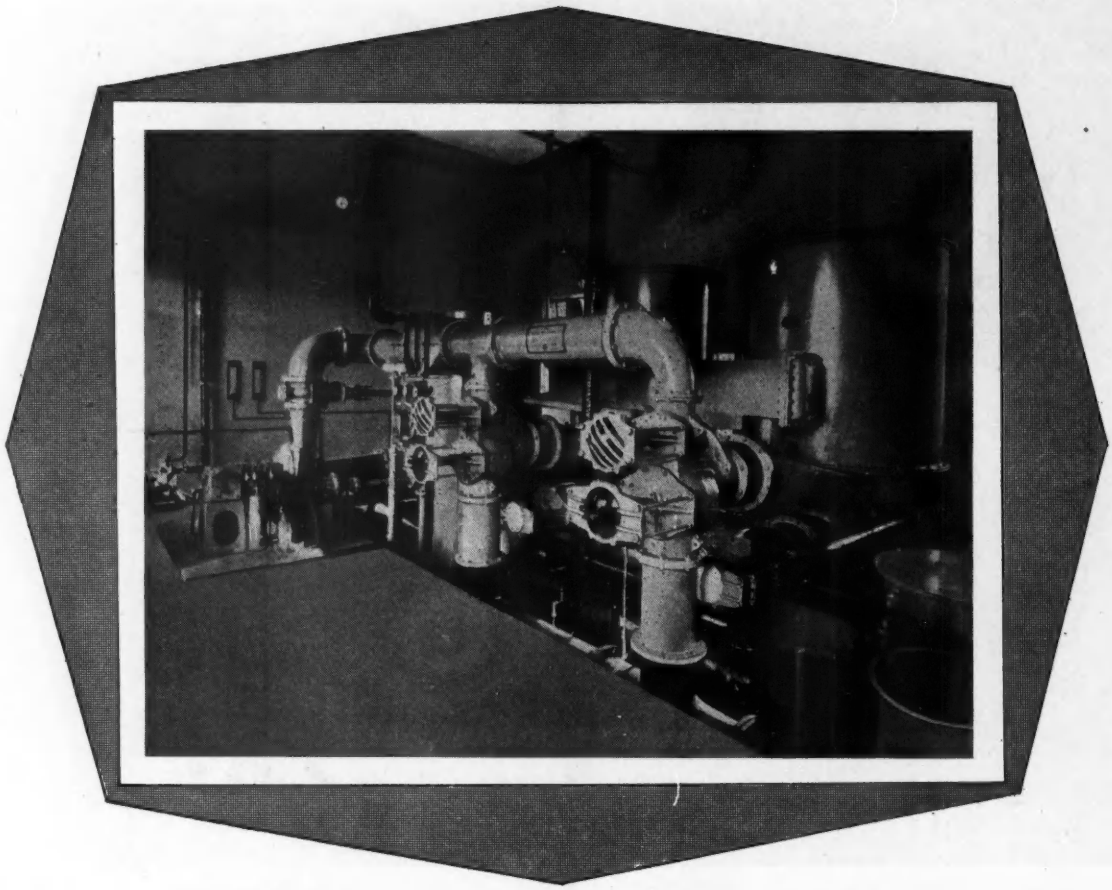

What experience means to benzole recovery in the Gas Industry!

The plant you see above is typical of many Sutcliffe Speakman plants already supplied to the Gas Industry.

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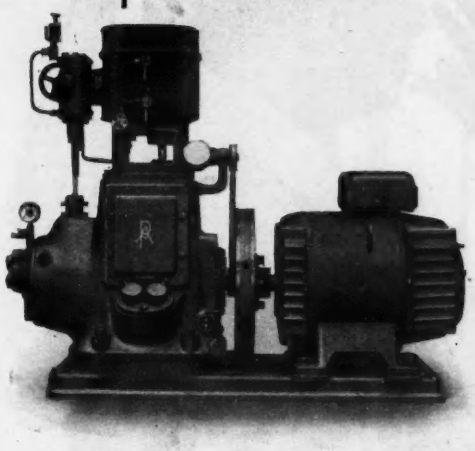

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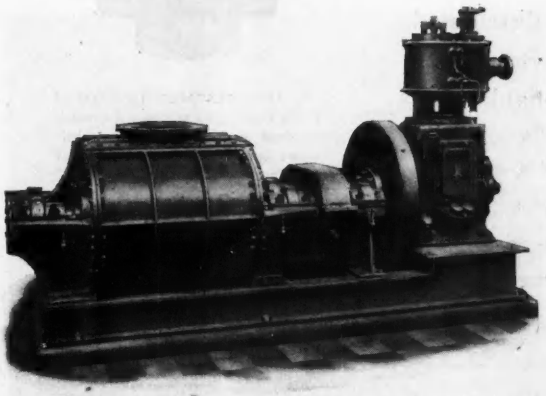

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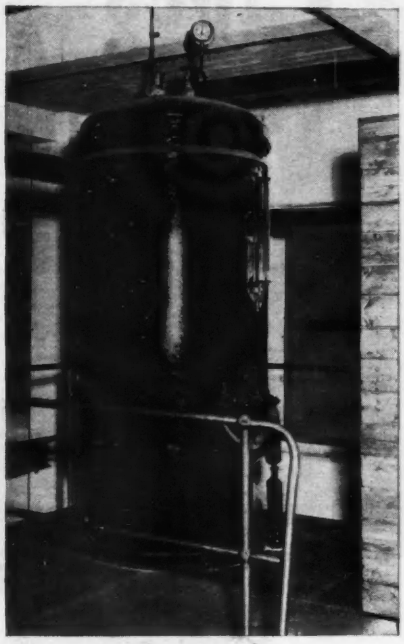

By courtesy of the Middlesex County Council and Messrs. Davey, Paxman & Co. Ltd.

The illustration shows the Continuous Blowdown and Heat Recovery installation for four Davey, Paxman boilers at the Central Middlesex County Hospital. This equipment follows a similar installation at the same Authority's Chase Farm Hospital, where, also, Filtrol water-softening plant is in operation.

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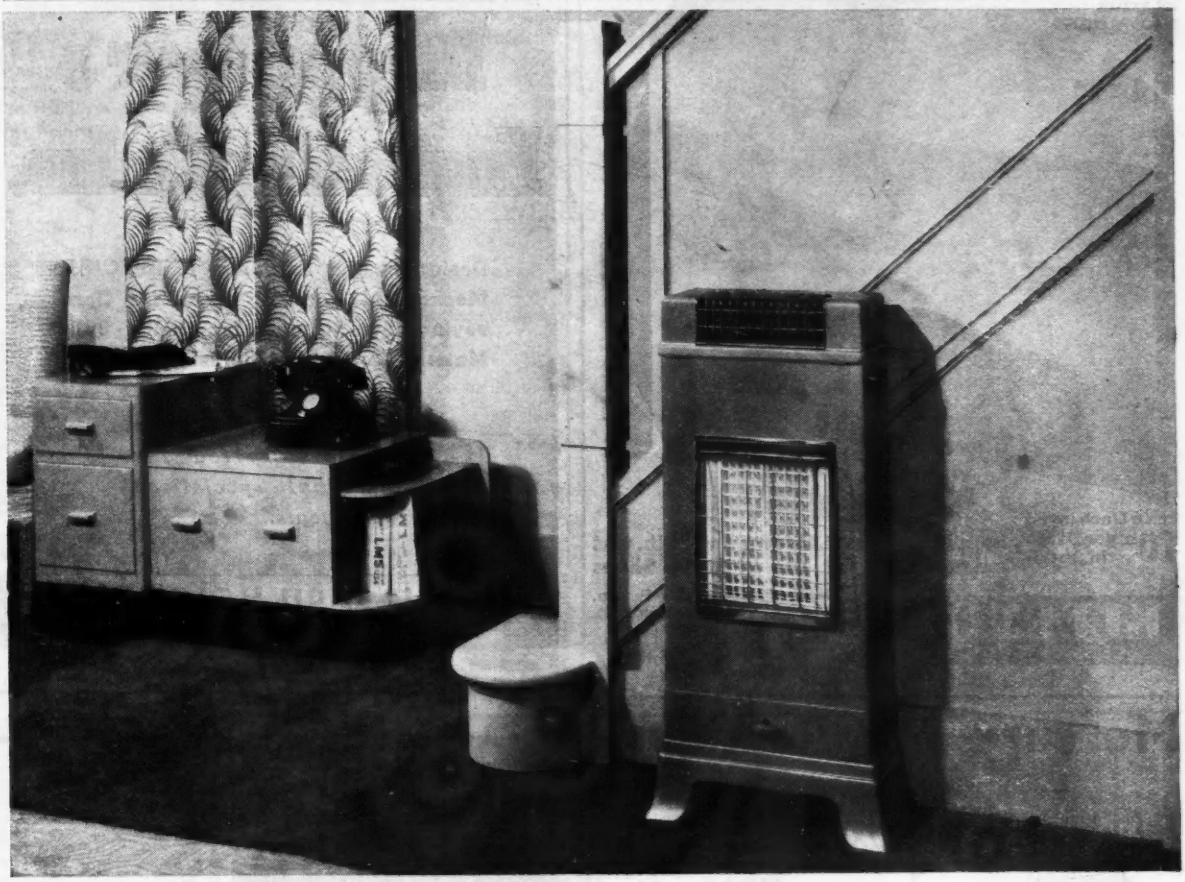

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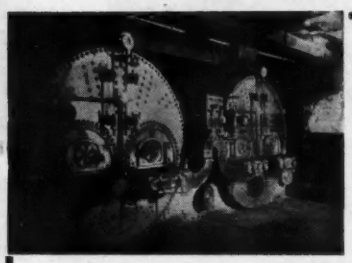

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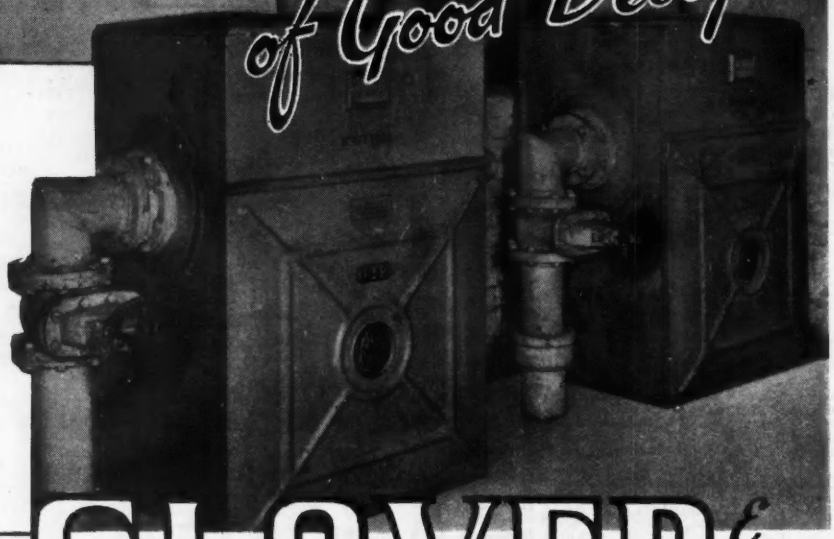

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EDITORIAL NOTES

SIGNPOST

IN the statesmanlike Address which he gave yesterday as President of The Institution of Gas Engineers, Mr. S. E. Whitehead set out certain lines of policy which in his opinion the Institution and its members will be well advised to follow. We publish this important Address, brimful of suggestion, in to-day's "JOURNAL." Each paragraph should be studied, and we are confident that in fact all the lines of thought put forward with such commendable brevity by Mr. Whitehead will meet with full consideration. Therefore we content ourselves here by spotlighting a few only of the points made and arguments advanced. Our Industry has a good record; during the period between the wars it was by no means idle. There was an infusion of technical ability, the full effects of which have yet to be realized as well as recognized. It is right that we should have regard to the progress made. Between the wars, while the coal carbonized increased by only 17%, gas produced rose by 42%, coke for sale by 30%, tar made by 47%. This is not a mean achievement, and it went hand in hand with improvements in the performance of appliances, both gas and coke. From coal to consumer there was an increase in overall efficiency of not far short of 40%. Since the outbreak of the second world war in 1939 there has been an increase of nearly 20% in annual gas sales—this, in face of the many difficulties, eloquent of the determination and flexibility of the Industry.

Our Industry, however, cannot afford, nor can we think it desires, to rest content with past record or present progression. Bigger things lie ahead; by integration, for example, great possibilities are likely to be grasped. The matter of physical size of a gas undertaking is important. "Below a certain output" —we quote from Mr. Whitehead's Address—"a good gas supply can in general only be provided at high cost"; and in this respect we would direct attention to the revealing figures set out by Mr. Whitehead under the heading "technical improvements." These figures should result in much blinker-shedding, and without question the present time provides golden opportunity for rearrangement—which is to cast no aspersion whatever on the work of the managers of the small gas undertakings; rather is it to regard clearly the handicaps under which they have worked and still operate and to plan for the removal of these all too obvious handicaps.

We have mentioned the infusion of technical ability which has taken place during the last quarter of a century or so, the benefits of which have made themselves apparent. But, as Mr. Whitehead suggested and as we too would emphasize, the present demands and the future will demand a great deal more in this direction. The section of the Address dealing with this matter appeals to us tremendously; it is so essentially to the point, so marked with keen observation. True, the influx of university graduates is one part only of the composite problem, but it is important; and here again we make no apology for quoting the following: "It is useless for gas undertakings to expect to place an order for such a man [*i.e.*, a university graduate and not necessarily a graduate in the faculty of gas engineering] and to take delivery without having themselves done something to make him available." Further support of the universities is called for; and looking at the matter in another light, why is it that the Ministry of Education is prepared to award large numbers of bursaries and so on in the fields of metallurgy and physics and general engineering, the while apparently offering little encouragement comparatively in the fields of gas and chemical engineering, which are surely of great national importance? Again—and from a different angle—why is there a tendency for the Institutions of Civil, Mechanical, and Electrical Engineers to figure as the representatives of the engineering profession to the exclusion of our own Industry's chartered professional body?

The foregoing are a few only of the points from Mr. Whitehead's Address—a contribution which we regard as a signpost to policy and to action along many channels, and certainly as providing both encouragement and incentive.

S.B.G.I.

THAT the work of the Society of British Gas Industries covers an ever-extending field is evident enough from the report of the Council for 1944–45 published in our issue to-day; equally apparent is the increasing extent to which the Society enters into the composite make-up of the Industry, the while it consolidates itself in its specialized and vital sphere. Frankly acknowledged in the report is the fundamental difference between the supply side of the Industry (the gas undertakings) and the contracting side (the manufacturers of gas-making plant and gas-using appliances); yet the desire for co-operative working is demonstrably expressed—and the expression is one of action rather than pious thought. To-morrow the National Gas Council and the British Commercial Gas Association will take the necessary formal steps to merge into the British Gas Council. The S.B.G.I. will remain outside that body, the while regarding the move as deserving complete and wholehearted support. The Society will concentrate on those matters—and they are many—relating to its special sphere.

The Society has worked continuously during the period reviewed by the report in complete accord and to effective purpose with the Government Departments responsible for "the exercise of control of raw materials and the instruments of production." The aim has been and remains to smooth the difficulties of the transition from purely wartime to peacetime production, all of which effort has direct bearing on the efficiency and capacity of the gas supply side. Such work obviously demands, and has obviously met with, skilful handling. Already —we quote from the report—"release has been obtained from such restrictive influences as quotas under Limitation of Supplies Orders and special wartime specifications. . . . the ground is well cleared for a major move forward, more particularly in those branches of the Industry where a diversion to war work has been heaviest." And it should be remembered to the credit of the Industry that in some groups covered by the Society the diversion has been as high as 90% and over. Home requirements will be met as speedily as what is undoubtedly a capable organization can make possible, and there is ample evidence in the report that the Society's members should be able to make an important contribution to the flow of international trade in the immediate years ahead.

The supply side of the Industry relies—we almost wrote "leans"—on the contracting side in remarkable degree. Sometimes we wonder if this reliance to some extent saps enterprise and initiative on the part of the gas engineer and manager, and in some directions has disadvantages as well as advantages; but we do not intend to pursue this thought further at the moment. As things have developed the mutual arrangement in common interest between contractor and gas engineer works well in practice, and we do think that a still better understanding will

be gained by contractors and suppliers meeting in common council as fellow members of the Industry's professional body, the Institution, which, like the S.B.G.I., does not come under the aegis of the British Gas Council. Witness of this growing understanding is to be found in the Society's report for 1944–45, in which such strong emphasis is laid on the Society's keen interest and active participation in and support of the work of the Gas Research Board. Such co-operation and understanding speak well for a future which will not by any means be shorn of difficulty.

Housing

In the Commons last Thursday the Minister of Works gave an account of the progress made in the housing programme. Referring to temporary dwellings, Mr. Sandys said that at that date 1,000 houses had been completed; erection had started on about 2,500; sets of components for about 5,000 houses had been delivered from the factories; foundations for 12,000 houses were in course of construction. Sets of house components of the Uni-Seco type were coming off production in a steady flow at a rate of between 800 and 1,000 a month. The production of the Tarran and Arcon types had started and should build up to a rate, taken together, of about 3,000 a month by the autumn. The first few American houses had already arrived, and the greater part of the total consignment of 30,000 would be despatched before the end of the year. Turning to the permanent house, the Minister of Works explained that more than sufficient sites for the whole of the two-year programme of 300,000 permanent houses had been acquired and approved, and it should be possible during the next six months to put in hand the whole of the first year's programme of 100,000 permanent houses. The Government, he added, stood by the long term programme for building 3,000,000 to 4,000,000 houses in 10 to 12 years, and a short-term programme with a minimum of 500,000 new houses built or building within two years from the end of the war with Germany. Of these, at least 300,000 were to be permanent, and of the remainder at least 145,000 would be temporary bungalows.

Interchange of Research Staff

Last week the L.M.S. Railway issued a statement charged with significance concerning the interchange of its research staff with universities. It signalizes a new stage in the establishment of closer relations between the universities and industry, bringing into practical focus that, while university and technical college laboratories will be to an increasing extent the training ground for the higher technical and research staffs of industry, and while that training must keep its basic character, it would gain by having a more realistic background. Each year some members of the L.M.S. research staff will be seconded to do fundamental research in their particular field in university laboratories. It is hoped that the universities will invite them to spend part of their time in teaching, so that they may make a useful contribution in this way. At the same time the universities will be invited to send members of their staff for six months or a year, or even shorter periods, to work in a research laboratory at Derby on applied problems in which they are interested on the fundamental side. They would also have access to all the departments of the railway, and would have the opportunity of seeing how the results of research are applied in large-scale developments. Everything is to be said for a constant interchange between university and industrial research laboratories to ensure that the latter may have the advantage of the latest ideas and technique, and that university staff may have the stimulus of seeing how fundamental research is being applied by industry.

Tar Distillers' Diamond Jubilee

The Diamond Jubilee Luncheon of the Association of Tar Distillers, held at the Savoy Hotel, London, on May 30, and presided over by Mr. C. E. Carey, immediate Past-President, was a bright and successful function. Mr. Carey asserted that the industry was not unmindful of the part to be played by tar as raw material for the chemical industry, and stressed the good relations existing between those petroleum interests which it might justifiably be said were going to "get cracking" and themselves. He ended on the note that the Association's Jubilee was less an occasion for looking backwards than for anticipating the successful celebration of its centenary after another spell of progress. Major Lloyd George, who was the guest of honour, emphasized that the future of the coal industry could only be assured by the payment of the best wages and the attainment of the best working conditions, but that simultaneously a price reduction to the consumer must be achieved. This apparent paradox could be resolved by efficiency alone, both in gaining the material and in its skilful use. Major T. Knowles, Coal Tar Controller, paid tribute to those who, in the early days following the foundation of the organization in 1885, worked so unselfishly in its interests. He paid high tribute to the service the industry had rendered the country during the war. It was one of the few industries that in 1940 took the initiative of enquiring what would be required of it in the national interests, and having had the answer, proceeded wholeheartedly to the problem of supply. Major Knowles gave impressive figures of, among other things, British-made high octane fuel, tar oils, Diesel oil, naphthalene, anthracene-cresylic acids, natural phenol, road tar, pitch-creosote, &c., and instanced as one of the most recent achievements the supply of 140,000 tons of pitch to S.H.A.E.F. for the manufacture of some million tons of briquetting fuel. He spoke with appreciation of the absence of friction in the exercise of his Control, and paid high tribute to the Association's presidents and its Secretary, Mr. R. Murdin Drake. He urged an intensification of educating, not merely the man-in-the-street, but many others who should be better informed, of the by-product industry's position and importance.

Gas Supply in Western Germany

Among the many functions of the Economic Division of the British Control Commission for Germany is the control of that part of the German Gas Industry which lies within the British zone, and we hear that a section of the Public Utilities branch is being organized for this purpose. The British zone will probably include the Ruhr with its complicated gas grid systems and concentration of coke-oven plants from which the gas is obtained. We believe that gas supply is at present practically non-existent in Western Germany, and the Gas Section will have a formidable task first in the restoration of supply, and secondly in the establishment of suitable control machinery. We presume that they will start to function in Germany when the Commission has established its headquarters in co-operation with the Commissions of the other Allies. A number of gas engineers are being appointed to the Commission, but we understand that there is still a demand for both administrative and technical staff for the control of the various functions of the German Gas Industry.

Letters to the Editor

May 8, 1945

DEAR SIR,—Volume 245, No. 4277 issue of the "GAS JOURNAL" for May 9, 1945.

On the first page of this issue and under the caption "May 8, 1945", you have written one of the finest editorials I have ever read. In fact it is the closest approximation of Lincoln's Speech at Gettysburg that one could imagine.

It should be set up in some permanent form and hung on your office wall as an inspiration to all of your associates for now and for the future.

Brooklyn Union Gas Company,
New York.
June 1, 1945.

Yours faithfully,
CLIFFORD E. PAIGE,
President.

Jersey's Fuel, 1940–45

DEAR SIR,—We of the Gas Industry in Jersey desire to extend to you, and to all the personnel of your paper, wherever they may be, our thanks for all that you and they have done in that great effort which has made our liberation possible. It has been a great pleasure to be able once again to read the pages of the "JOURNAL," even though the position of the coal-mining industry has given one rather a shock.

We have been spared the horrors of war. We have always realized that our fate would not be as that of the Poles and Jews, because we were British subjects.

It might perhaps interest some of your readers to know, briefly, what we were able to do for the civilian propulation:

Stock of gas coal	June 30, 1940 . .	9,632 tons
,,	,, Sept. 4, 1944 . .	*Nil*
Supplies received from France	. . .	58,230 ,,
Total coal carbonized	. . .	67,862 ,,

Of the total gas sold, 83.5% was entirely for the civilian population, and of the 20,000 tons of coke sold 85.5% was entirely for the civilian population.

We exported no tar to France, and in the difficult winter of 1944–45, when we had virtually no solid fuel of any description, tar, in its liquid form, was used as a fuel.

These results were only obtained by a process of deliberately false returns to the Boche.

But the fear of the Gestapo has gone, due to your efforts, and we now look forward, as very junior partners in a free world, to the work of reconstruction, and to the ultimate attaining of a world society freed for ever from the spectre of fear, and all that that implies.

Jersey Gas Light Company, Ltd. Yours faithfully,
June 5, 1945. STUART P. PEPIN,
Engineer and Manager.

The Gas Staff Association

Formed as the result of a mutual desire on the part of the employers and the staffs for consultative machinery, the Gas Staff Association completed its first year with a membership of 2,122, consisting of 12 branches, of which nine are in the London area. At the first annual general meeting held in London on May 29 a new constitution was approved which contemplated national development on the basis of regional councils, and it was reported that already since Mar. 31, the end of the Association's year, another provincial branch had been formed, at Colchester, and that the present total membership of about 2,400 was approximately double the number originally enrolled. The London branches represent the staffs of four London companies; four other London companies have their own separate associations with a central committee, and "friendly and useful conference" has taken place with that committee with a view to joint negotiation on agreed matters.

Reviewing the first year's progress, Councillor W. E. Webb, Chairman of the Association, said that within six months they had a 50% membership of the staffs of all the four London companies which was required as a preliminary to recognition by the employers. By last February the Association was strong enough to embark on the employment of a paid full-time secretary. The Council had worked energetically throughout the year, and at its monthly meetings 100% attendances had been the rule rather than the exception. The year had been marked by the retirement of Sir David Milne-Watson, whose immense services to the Gas Industry would be remembered with affection, and the appointment of Mr. A. E. Sylvester, not only as Governor of the Gas Light and Coke Company, but as Chairman of the British Gas Council. In Mr. Sylvester they had at the head of the Industry a man fully alive to the situation, and they were confident he would not only do something for the Industry, but a great deal for the staffs and employees.

Among the matters to be dealt with in the near future was the position of the men and women who would be returning from the Services, and in that connexion he had recently met Colonel H. C. Smith, Chairman of the Federation of Gas Employers, and had come away with the impression that in the Industry generally nobody was going to get a raw deal. Their watchword should be service to the public, and the prosperity of the Industry would depend on the extent to which employers and staffs alike put that watchword into practice. There would, in his opinion, have to be drastic changes in the future, and in order to progress they would have to have amalgamation in the Industry, standardization, legislation, and co-operation for all. So far as London was concerned, and most probably throughout the country, the day of the small undertaking was finished if they were going to give service and if the Industry was to thrive. The Heyworth Committee was sitting on the future of the Industry. The staffs had no desire to see the continuance in many undertakings of low rates of salary, poor conditions for the employees, and even poorer service to the public. Modern conditions demanded that if they were going to get anywhere they must sell more gas and more appliances, and generally adopt modern methods.

Mr. H. J. Arnold, General Secretary, reported that the membership comprised 1,386 men, 385 women, 151 juniors, 35 superannuated members and 165 members in the Forces.

The amended constitution was introduced by Mr. W. H. Davey, Vice-Chairman, who explained that its broad object was to achieve a complete national set-up on regional lines. Great Britain and Northern Ireland were to be divided into 13 electoral regions, to correspond with the regional set-up of the Employers' Federation, each region to be governed by a regional council. Members would elect their own branch committee and officers as at present, and the branch committees would elect the regional council for the area. The regional councils would elect the Council of the Association, on nominations received from branches. Branches would elect their own members as delegates direct to the annual delegate meeting, at which the officers of the Association would be elected by the members through their delegates.

After some discussion the constitution was approved, and the following officers were elected: Chairman, Mr. W. E. Webb; Vice-Chairman, Mr. W. H. Davey; Treasurer, Mr. T. R. Robson; Auditors, Mr. H. L. Bristow, Mr. G. Lovell, and Mr. Reeves.

A Summer Special Meeting of the Institution of Heating and Ventilating Engineers will take the form of a brief business meeting, to be followed by the reading of a Paper by Mr. A. L. Longworth on "Fuel Saving by Thermostatic Control." It will be held at the Institution of Mechanical Engineers, Storey's Gate, London, S.W. 1, on June 20, at 6 p.m.

The Aluminium House

The first aluminium house, designed by the Aircraft Industries Research Organization on Housing (AIROH), a brief description of which was given in the "JOURNAL" of April 18 (page 499), was opened for public exhibition by Mr. Duncan Sandys, Minister of Works, in Somerset Street, at the rear of Selfridges, on June 5. The aluminium house is one of seven types of temporary houses to be supplied to local authorities under the Housing (Temporary Accommodation) Act, 1944. The houses will be provided and owned by the Government, and the local authorities will choose the tenants, fix and receive the rent, manage the houses, and keep them in repair.

An order for 50,000 aluminium houses has been placed by the Ministry of Works, the Ministry of Aircraft Production acting as agents for production. The order is being treated on lines similar to the manufacture of aircraft, and production will take place at five centres (four in England and one in Scotland). Production begins on a small scale this month, and will eventually build up to a peak production of 5,000 houses a month.

The exhibition house, which is fully furnished, has a floor area of 662 sq.ft., and comprises a living room with a glass panel through which a mother can keep a watchful eye on her children, two bedrooms, hall (with space for a perambulator), bathroom, and kitchen, with refrigerator and boiler. Most of the 50,000 houses will be equipped with a standard gas kitchen unit, though the one on view has an electrical unit, and water can be heated either from the kitchen unit or from the fire in the living room.

The house is completely prefabricated in four separate units, each unit being assembled in the factory, where all the fitments are installed and final decorations are carried out. The speed with which it can be erected is illustrated by the fact that the exhibition house was completely erected in eight hours.

In opening the house, Mr. Sandys said it had been perfected after two years' research on the part of the aircraft industry in consultation with housing experts, with the two-fold object of helping to meet the acute housing shortage and of turning the highly organized aircraft industry over to useful peacetime production. In olden times they spoke of beating swords into ploughshares; to-day they were beating bombers into bungalows.

The exhibition house will remain open for inspection in conjunction with the aluminium exhibition at Selfridges, to which we referred last week, until the end of the month.

North of England Auxiliary

At a meeting on May 25 of the North of England Gas Managers' Association (Auxiliary Section) the following Officers were elected for the ensuing twelve months:

Chairman: D. Yule, South Shields.
Vice-Chairman: J. R. Cleator, South Bank.
Member of Committee: J. McManus, Wallsend.
Hon. Secretary: L. M. Weldon, West Hartlepool.
Education Committee: W. O. Kirkwood, Sunderland; W. Clark, Middlesbrough; and B. Richardson, Newcastle-on-Tyne.

Diary

June 14.—N.G.C.: Annual Meeting, Gas Industry House, S.W. 1, 10.30 a.m.
June 14.—Federation of Gas Employers: Annual Meeting, Gas Industry House, S.W. 1, 2.30 p.m.
June 14.—B.C.G.A.: Annual Meeting, Gas Industry House, S.W. 1, 11.45 a.m.
June 21.—Industrial Gas Centres Committee: Gas Industry House, 10 a.m.
June 22.—Waverley Association of Gas Managers: Y.M.C.A. Hall, Edinburgh, 10.30 a.m.
June 23.—Western Junior Gas Association: Meeting at Minehead.
June 25.—London and Counties Coke Association: Finance Committee, 11 a.m.; Executive Committee, 11.30 a.m.; Central Committee, 1.30 p.m., Gas Industry House.
June 25.—Women's Gas Council: Annual General Meeting, Gas Industry House, 3 p.m.
July 6.—Manchester District Association of Gas Engineers: Visit to Rochdale.

Personal

Mr. W. A. MORTON, Works Controller of the Davis Gas Stove Company, Ltd., has been elected to the Board of the Company.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Institution of Gas Engineers

PRESIDENTIAL ADDRESS*

[I.G.E. Communication No. 277]

By S. E. WHITEHEAD,
J.P., B.Sc., M.Inst.C.E., M.I.Mech.E.,
Managing Director, Southampton Gaslight and Coke Company

OWING to the cancellation of last year's Meeting I have not yet had an opportunity of thanking you for the honour you conferred upon me, and through me upon my Company, by electing me to the Presidency of this Institution. I therefore first of all thank you most sincerely for that honour, which I need hardly assure you is one I greatly prize.

The Institution's outlook must obviously be mainly technical, but the Gas Industry—and in fact all industry—has become so complex that no sharp dividing line can be drawn between technical and commercial matters. Such things as costs of plant and of its operation, varying load factors, employment of capital, etc., must all be taken into full account by the Engineer in addition to purely technical considerations.

The Past

As regards the past, a very brief review indicates that we may take legitimate pride in the progress which the Gas Industry has made since its inception, and in the fact that the year 1939 found it, although old in years, virile and able to tackle the tremendous tasks of the second World War as it had successfully done in the war of 1914–1918.

The late Lord Moulton, who had been Director-General of Explosives Supply during the whole war period, honoured the Gas Industry by accepting the Presidency of this Institution in the year 1917–18, and in the latter year paid a great tribute to its work in his Presidential Address. Such praise, coming from so eminent an authority, was indeed gratifying, but I am quite sure that when the details of our contribution to the present war can be made known, the achievements of the last 5½ years will give us cause for greater satisfaction and pride than we have ever felt before.

Much can be done under the spur of wartime requirements, but it should be noted that, in the period between the two wars, not only was there a steady increase in the demand for gas and in the number of consumers, but over the same period very considerable improvements in the manufacture and distribution of gas, in the plant required for these purposes and in the apparatus constructed for its use.

For example, a comparison of the Board of Trade Returns for 1938 with those for 1921 (the first year in which by-products were included) is illuminating. Whereas the coal carbonized increased by 17% in that period, the coal gas produced rose by 42%, the coke for sale by 30%, and tar made by 47%—an increase in thermal efficiency of some 15% in 17 years.

It has been estimated that the average efficiency of domestic gas appliances increased by 20% in the same period, and this is borne out by the fact that, in spite of the large increase in gas sold, the average consumption per consumer tended to fall, due in part to the introduction of improved appliances. Thus there was an improvement in overall efficiency (from coal to consumer) of the order of 38%.

Since 1939 the annual sales of gas have increased from 321,300 million cu.ft. to 379,100 million cu.ft. in 1944 (or 18%) and the output of benzole has been doubled, but this additional putput of gas was by no means evenly spread over the country. Many undertakings have experienced a severe loss of output owing to evacuation and bombing, so that it is easy to imagine the enormous increases (in some cases well over 100%) between 1939 and 1944 experienced by others. This demand had to be met—and was met—under conditions of great difficulty. The acute shortage of labour, the scarcity (and frequently the unsuitability and poor quality) of coal supplies, the impossibility of maintaining plant, air raids and "V" bombs, blackout conditions of working—all these add up to a very severe handicap and prompt the question, "How have we got through?"

The answer lies mainly in the hard work and determination, and frequently in the gallantry, of gas engineers, their technical staffs, and employees. To the engineer there can be few experiences more disheartening than to see his works, so strained and badly needed for the war effort, damaged by bombing; but the engineer is helpless without the backing of his staff and operatives, and the Industry has reason to be proud of its work and distribution men of all grades, many of whom have unfortunately been killed or injured at their posts.

In view of all the conditions it is indeed remarkable that there have been so few failures of gas supply (these almost entirely due to enemy action), and that in fact the efficiency of gas production, as shown by the investigations of the Regional Gas Engineering Advisory Boards, has been so well maintained.

* Presented at the 82nd Annual Meeting in London on June 12.

The Present

As for the present, the magnificent achievements of the United Nations in the west must not blind us to the fact that the winning of the war in the east is likely to need a prolonged and severe effort. The demand for man-power and munitions will therefore continue, and as a result we are still working under very serious difficulties. We also have a great deal of leeway to make up, but we have every reason to hope that our major troubles will soon be over. We are, in fact, so sure of this that it appears appropriate to take stock of our present position by constructing a form of "balance sheet."

On the debit side we must place the following items:

Deferred repairs and renewal and maintenance of plant, which would normally have been carried out during the war period, and including the repair of outstanding war damage.

Acute shortage of coal and materials, appliances, and labour.

The very high cost of all items of plant, of mains, and of gas-consuming appliances.

(The above are directly due to the war and are common to all industries, including our competitors.)

The large number of small units which comprise a numerically large proportion of the Industry.

Our assets, as I see the position, are as follow:

Many years of useful service and experience, and in consequence the goodwill of the public.

A process which gives at once the highest known thermal efficiency of coal usage, and a surprising degree of flexibility in regard to the proportions of gas and coke produced.

The ability to offer good smokeless fuels and service.

The fact that our by-products—particularly benzole and tar derivatives—will be in ever-increasing demand to meet the requirements of the expanding chemical industries and to reduce the imports of finished products.

A supply of still better and more efficient gas and coke burning appliances awaiting production.

An active and thoroughly tested research organization, comprising the Gas Research Board working in close collaboration with the laboratories of the gas undertakings and of the manufacturers of plant and appliances.

Considerable technical activity and enthusiasm throughout the Industry, as shown by the contents of the Technical Press even in wartime.

Happy relations with labour.

The strengthening and unification of the Industry's national bodies.

Extensive and soundly established contacts with various Government Departments.

The possibility of considerable improvements due to integration.

The Future

And what of the future? In the above balance sheet there is obviously a large credit balance, but it would appear that its magnitude is to an extent dependent on two unknown factors—the uncertainty with regard to, firstly, coal supplies in the future, and secondly, the post-war policy of the Government in relation to the Gas Industry.

Coal Supplies

Coal is our life-blood, and accordingly a regular supply of suitable coal of good quality and at a reasonable price is essential. By the word "suitable" we mean "of reasonable caking value," but it is a common mistake to suppose that the gas-works must always have coals of the highest quality. This is by no means so, because the skill of our plant manufacturers has enabled them to design plants which will carbonize efficiently a wide variety of coals. Recent work shows that the caking power of coal improves as the pressure at which it is treated increases, and further developments will no doubt result in the ability to use more and more types of coal—probably in time any type of coal—for gas-making.

Whether under existing or future conditions, however, it is of the utmost importance that all undertakings shall be free to obtain coal of whatever type, grade and quality they may require. Beyond this it is true to say that the chief requirements in regard to our supplies are (1) constancy of quality and type, and (2) the lowest possible ash content. Surely the time cannot be far distant when coal will be bought to a specification, with suitable compensation clauses in the

contract for any deficiency. No gas engineer would object to paying a little more for a particular coal if he could obtain in return a lower ash content, provided, of course, that the original price were reasonable.

And what is a "reasonable" price? That, indeed, is a question which we would like to have answered, and to which replies from producers and consumers would differ widely, but at least it must not be so high as seriously to handicap this country's export trade and major home industries such as our own. Although we can expect certain relief in freights, insurances and similar war-time costs, it is clear that the price of coal will for a long time exceed the pre-war figure. Various reports on the mining industry suggest that there may in time be some means of effecting reductions, and it is important that everything possible in that direction shall be done as a matter of urgency in the national interest. It is also important that there shall be no discrimination against the Gas Industry. A high pit-head price of coal should surely justify still more encouragement to the Industry which uses the nation's fuel resources with the highest overall efficiency.

Government Policy.

Two important bodies were recently appointed by the Minister of Fuel and Power and are at present sitting—namely, Mr. Geoffrey Heyworth's Committee of Enquiry into the Gas Industry, and Sir Ernest Simon's National Fuel and Power Council. The Institution was invited to submit a memorandum to the former body, and later to supplement it by giving oral evidence. Information has also been supplied to the National Fuel and Power Council. Each of these Committees is making a most thorough and far-reaching investigation, and it is with the keenest interest that we await their reports, on which the Government's post-war policy will no doubt largely depend.

We trust that this policy will offer the Industry more latitude and flexibility to develop and expand freely, by its own initiative and in its own way, its usefulness to the public. It is earnestly hoped that the public, in turn, will be educated and guided in the vital matter of atmospheric pollution and that, subject to that over-riding consideration, they will be given freedom of choice in regard to the fuels which they consume for various purposes. This is a matter of supreme importance not only to the Gas Industry, but to the consumers and to the nation as a whole, and I understand that the Report of the Egerton Committee is likely to recommend the construction of a flue in every room, as well as the provision of gas and electricity supplies in all new houses at the time of their erection—two points of great value in assisting both coal conservation and smoke abatement.

If these uncertainties can be satisfactorily resolved, the future of the Gas Industry is indeed bright and full of opportunity to give additional service to the community, to raise the standard of living and to make the maximum contribution to the national welfare.

Whilst, however, there is every reason for high optimism, there is no room for complacency. We, like the nations of the world, have a heavy and exacting task before us in order to provide an "abundant and cheap supply of gas" and the highest degree of gas service. In that connexion there are two urgent and important requirements which concern us as gas engineers. The first is to improve the technique of gas manufacture, distribution and utilization to the highest possible level in the light of modern knowledge and facilities, and the second is to ensure the provision of an adequate and fully-trained technical staff.

Technical Improvement

Under this heading I would enter a strong plea for a greater implementation of the Institution's recommendations. Much time and effort are devoted by the various Committees and valuable Reports and recommendations are produced, only, unfortunately, to be disregarded by a large section of the Industry.

Another important way in which technical improvement can be effected—and, as I see it, a method which most certainly must be adopted in the near future—is the concentration of gas manufacture in larger units by the elimination of many small and isolated works.

I would like to say at once that I am full of admiration for the managers of our small undertakings, who have had a most exacting time during the war years and to whom the Industry and the country owe a big debt of gratitude. Many of them have toiled day and night to maintain supplies in spite of shortage of coal, plant and labour, and it is by no means their fault that their works are relatively costly to operate.

It is mainly a question of size. A small gas-works can be (and in some cases is) operated at high thermal efficiency if the necessary technical staff, plant, and instruments are available. It is unlikely, however, to be also economically efficient. In other words, below a certain output a good gas supply can in general only be provided at high cost. The necessity for technical supervision is obvious, while the load factor tends to improve as the size of the works increases, and in particular there is a reduction in the proportion of fuel used for heating standby plant. The main advantage possessed by the larger unit lies, however, in cost of manufacture, and although this fact is generally accepted, the extent of the differences is not always appreciated. Assuming the same prices for materials and rates for labour throughout, the cost into holder of gas made in similar plant of various sizes, and also the capital cost of some items of plant, are to-day in the following approximate ratio:

Output, million cu.ft. per day.	4	1	0.5	0.25
Cost of coal less by-products	1	1 to 1¼	1¼	1¼ to 1½
Cost of carbonizing labour	1	2¾	4¾	5¾
Cost into holder*	1	1 to 1¼	1¼ to 1½	1½
Capital charges on:				
Carbonizing plant	1	1¼	1¼ to 1⅝	2
Exhausters and engines	1	2½	4	5
Washing plant	1	2½	3½	4
Purifiers	1	1½	1⅝	2
Gasholders	1	1½	1½	2 to 2½

* Excluding capital charges, repairs and maintenance, and salaries.

The above are based on present-day prices and are accentuated by high wartime costs, but there appears little reason to expect a return to pre-war figures. The costs of transmission of gas over long distances have recently been given by H. J. Escreet and by W. Hodkinson and H. B. Taylor, and, considered in conjunction with the above figures, suggest that a physical linking-up would effect substantial savings in very many cases. Due allowance must, of course, be made for the increased cost of coke distribution.

It is therefore apparent that the number of manufacturing centres (and it must be remembered that 75% of our undertakings make in all only some 6 to 7% of the total gas made) should be drastically reduced either by amalgamations or by the provision of bulk supplies, but any scheme for such concentration of production must have regard to many factors in addition to those I have mentioned. The most important local consideration is that of site. The position and area of the site, the possibility of its extension, the availability of rail and water communication, and so on, are of prime importance, and it follows that it will not always be the largest works which becomes the centre of manufacture for a particular area.

This idea of centralization, of course, is not new. Indeed, the details which have been studied in connexion with post-war planning have revealed that a great deal of unification was effected in the decade before the war, and that the invariable result has been an expansion and cheapening of the supply of gas in the absorbed area, usually coupled with better service.

I suggest that the present time provides a golden opportunity for some rearrangement on these lines, owing to the urgent need for large-scale renewals and replacements of plant. Steel and refractories are likely to be in short supply for some considerable time, and it is obviously preferable in the national interest and from the point of view of the individual undertakings to provide, for example, one new retort house (plus the necessary connecting mains) than to rebuild three, four, or half-a-dozen, to give the same total capacity.

War conditions have also revealed the necessity for enlargement and modernization of many distribution systems, and this is not confined to the smaller undertakings. It would appear that the large measure of interlinking which would follow the centralization of manufacture would assist materially in this direction as well as facilitating the giving of rural supplies.

In this connexion our Institution can be of especial service in the future. The Regional Gas Engineering Advisory Boards have done, and are doing, most valuable work not only in the saving of fuel but in mutual assistance of many kinds, and it is not too much to say that in many instances they have been the means of avoiding a breakdown in gas supply owing to war conditions. In general, the Boards' inspections are welcomed and acted upon and, although they will probably cease to function in their present form at the end of the war, it is very much to be hoped that they will be used as the nucleus of some regional or district scheme for mutual consultation and help. In particular the Boards have collected a large amount of technical information which, with the consent of the undertakings concerned, should obviously be made available when any scheme for integration or centralization of manufacture is under consideration in a particular area.

Technical Staff

Here I would like to pay a tribute to the technical personnel of the Industry, who are mainly of a high degree of ability and certainly do not lack enthusiasm. Their qualities have been tested during recent years, and they deserve well of the Industry.

We have also an essential duty to the men who left us to join the Forces. We are fully conscious of the great debt we owe them and there is, of course, no question that they will be fully and gladly reinstated on their return, but that is not quite enough. While they will have gained considerably in general experience and character, it is obvious that their knowledge of gas engineering will have deteriorated during their absence. They must therefore be provided with refresher courses and other forms of training which will enable them to feel that they are in no way handicapped by their war service.

The Institution has been considering this matter closely, and I am glad to report that our conversations with Government officials have so far been most satisfactory. There are three classes of men to consider—namely:

(1) Those who had completed their professional training before enlistment.
(2) Those whose training has been interrupted by war service.
(3) Men who wish to become gas engineers, but who had not actually commenced such work before enlistment.

All these cases are covered by the Government's "Further Education and Training Scheme." Those in Class (1) will be eligible for refresher courses and the others for more comprehensive training, in each case

with financial assistance if necessary. Details are now being considered by the Institution in consultation with the Ministries of Labour and National Service and of Education.

Our processes in the future will call for more specialists and for a still higher level of technical training, a matter to which I will refer later. Integration will help in this direction, but every effort must also be made to attract recruits of suitable character and training and, it is to be hoped, to make careers in the Gas Industry more attractive to such men. With this in view we have recently set up a Careers Committee which is actively engaged in making the profession more widely known to Universities, public and secondary schools, and the public generally, and is considering for this purpose the preparation of a suitable brochure as soon as conditions allow.

This subject is, of course, closely bound up with the question of salaries—a matter with which the Institution cannot deal directly under the terms of its Charter. That disability, however, does not lessen our interest in the subject, nor does it prevent our noting with the greatest possible regret some of the totally inadequate salaries which are in force at present or which are offered in advertisements. It is hoped that a greater appreciation of the Industry's importance in the service of the public will result in a considerable betterment in this direction. It is equally to be hoped that Gas Committees and Boards of Directors will appreciate the advisability of requiring Corporate Membership of the Institution as a qualification for responsible engineering positions.

The Institution's Part

In all this development The Institution of Gas Engineers will be called upon to play a vital part, but my experience of the keenness of its Corporate Members, the hard and valuable work of its Council and Committees, and the efficiency of its staff, convinces me that it will be equal to the task.

We must, as always, do everything possible to exchange ideas and experience; through our Committees and publications, and by close contact with the Gas Research Board, we must assist to the utmost the development of improved processes and the practical application of the results of research; and we must continue to co-ordinate the views and aims of our profession by even stronger contacts with the District and Junior Gas Associations.

The Institution must continue to co-operate to the fullest possible extent with Government Departments, with kindred professional institutions and with other bodies and committees of the Industry, the last being effected by carrying out technical work for the other national bodies, by setting up special *ad hoc* committees and by nomination of Institution representatives on other committees.

It may here be appropriate to refer to the inability of the Institution to become a constituent member of the proposed British Gas Association, or of the British Gas Council which has recently been formed as an interim measure. This again is entirely due to the terms of our Charter, which preclude the Institution from engaging in any commercial activity, and not to any unwillingness or lack of sympathy with the proposal. It has, in fact, been made clear that the Institution will work in parallel with these new bodies, and is both willing and anxious to provide a technical background for any of the work which the Industry may undertake in its unified form.

With regard to kindred institutions, there appeared a few years ago to be some prospects of closer liaison through, *inter alia*, the Engineering Public Relations Committee. This unfortunately ceased to function on the outbreak of war, and there is now a tendency for the Institutions of Civil, Mechanical, and Electrical Engineers to figure as the representatives of the engineering profession to the exclusion of our own and other chartered bodies. This is regrettable, since no such group can claim to possess any mandate from, or to be representative of, the other professional organizations. While it is obvious that none of these bodies can delegate its executive powers to any joint federation or committee, there are nevertheless many subjects of general interest—for example, reconstruction and post-war planning, rehabilitation, education and examinations—in which consultation and collective action would be in the interests of all concerned. This matter has been discussed unofficially with the President and Secretary of the Institution of Civil Engineers, and a suggestion has been made for their consideration that a Joint Standing Conference of Engineering Institutions should be established to discuss and consider all matters of common interest to the professional engineering institutions.

Utilization of Gas

In the past the proceedings of the Institution have tended to lay emphasis on manufacturing subjects, but in recent years more and more attention has been given to the utilization of gas and the appliances needed for its consumption. In my opinion this trend will become more apparent in the future, as is indicated by the work of the past year and by the Papers which are to be presented to us at this meeting. The excellent work of the Gas Research Board in the direction of complete gasification and hydrogenation of coal may greatly affect the whole question of distribution and utilization, but this is essentially a long-term policy, and we must face the reality that for a considerable time the Gas Industry will continue to use the existing methods of producing and dealing with gas and coke. It is therefore necessary to bear in mind that the cost of distribution of a therm of gas frequently approaches and sometimes exceeds its cost of production. On the other hand, apart from the effect of centralized manufacture, comparatively little reduction in manufacturing costs will be possible with existing methods. It is therefore of prime importance to reduce the costs of distribution of gas by improving the load factors, and especially by increasing the consumption per consumer. It is here that utilization assumes considerable importance, particularly when one remembers the large industrial field which is available, and the marked increase in the popularity of gas for domestic purposes brought about by recent improvements in the design of appliances. The technical aspects of gas utilization are therefore receiving increasing consideration by the Institution, as demonstrated by, *inter alia*, the excellent report of its Gas Installations Committee and by the series of Codes of Practice which it is producing.

Education and Training

Finally I would refer to a subject which is probably as urgent and important as any I have previously mentioned. It concerns the technical education and training of both existing personnel and new entrants to the profession. Those who are already in the Gas Industry and who have not yet completed their training are covered by the Institution's Education Scheme which, as you are aware, has done excellent work and is at present in process of substantial revision. As regards new entrants there are two main classes : (*a*) Public or secondary schoolboys coming in as trainees with a matriculation or equivalent qualification, and (*b*) University graduates with or without research experience and usually needing practical training. Both these classes provide suitable recruits, but the youth entering from school needs to obtain his theoretical training at a local technical college, and the scattered nature of the Industry, together with the limited number of suitable colleges, make this difficult in some cases. He has the advantage of gaining practical experience while his evening and part-time training proceeds, but his theoretical education is probably not so good, nor does he enjoy the advantages of the corporate life and general training of the University man. The graduate, on the other hand, usually comes to us without practical experience, and I have long been inclined to the opinion that the best method is probably a period of, say, two years at a works between leaving school and entering the University. This has produced some good men in the past, but is, of course, impracticable under war conditions.

There will always be a demand for the "all-round" gas engineer, whether on the works or in the distribution department, but the science and practice of gas engineering is rapidly becoming more complex and demanding a higher degree of skill, so that the future tendency will be to require more specialists if we are to enjoy the full advantages of research and development.

There is therefore an urgent need for large numbers of University-trained men, and the particular course which they follow or the degree which they hold is a matter which should not be too rigidly laid down. The main thing is that the man should be trained in scientific methods with a good basic knowledge of main subjects, leaving him to specialize after graduation. Thus an engineering degree with some chemical experience, or a degree in chemistry and physics together with some engineering work, appear to be suitable, and there is no doubt that the existing courses for degrees in gas engineering and chemical engineering fulfil these requirements.

The demand already exceeds the supply, and this will become more pronounced. It is, however, useless for gas undertakings to expect to "place an order" for such a man and to "take delivery" without having themselves done something towards making him available. I appeal most strongly to the Industry to act at once in this matter, and to do everything possible to maintain a steady flow of graduates into its ranks. This can be done by the undertakings themselves (individually in the case of the largest, and by the others through some collective scheme) or through the national bodies, and should take the form of the fullest possible support of Leeds and other Universities, and especially of the provision of more scholarships and bursaries.

The University of Leeds has a natural and particular appeal to us, and the positions which are now filled by past students of the Department of Coal Gas and Fuel Industries, given in the Annual Reports of the Livesey Professor, bear eloquent testimony both to the efficiency of the Department and to the openings for qualified men in the Gas Industry. The demand, however, is greater than can be satisfied by Leeds alone. We must remember that Fuel Departments exist at other Universities, notably London, Birmingham, and Sheffield, and the recent proposals for co-operation between the Gas Industry and allied industries in the Midlands and the University of Birmingham are worthy of close attention.

But however good its work and facilities may be, the University can only give us the men who choose to come to us: in other words, it still remains for the Industry to attract these men to its own ranks *via* the University, and I have already indicated one or two means of effecting this. At present, of course, the matter is complicated by the demands and regulations of the Ministry of Labour and National Service, which are well understood and unavoidable, but there is another aspect of Government activity which is causing some concern in gas education circles. I refer to the award by the Ministry of Education of large numbers of bursaries in the fields of metallurgy, engineering, and physics with radio. The object of the scheme, which is both justifiable and effective, is to provide a supply of qualified men to assist in the prosecution of the war. At this stage of the conflict,

however, it would appear possible to modify the scheme considerably, for it is high time that a fair proportion of suitable youths should be encouraged to enter wider fields of equal national importance, including gas and chemical engineering. The need for such men is so pressing that it appears advisable for an approach to be made to the authorities through an appropriate channel.

Conclusion

For a variety of reasons the activities of the Institution in wartime, although more diverse and urgent, are less obvious and receive less publicity than under normal conditions. The past year has been strenuous, but also one of useful work and solid progress. I have not attempted to review that work, since much of it has been indicated in my foregoing remarks and in the Annual Report of the Council; rather have I endeavoured to set out some lines of policy which, in my opinion, the Institution and its members will be well advised to follow in the altered conditions of the post-war period.

One of the changes facing our Industry will probably take the form of some alteration in its structure. Apart from our natural and sincere wish that the Industry will be permitted to bring about any such alteration by its own machinery, this matter will hardly affect the Institution itself.

Whatever may be the final structure of the Gas Industry, the Chartered Institution of Gas Engineers is, and will remain, the professional and technical body of that Industry, and will therefore carry heavy responsibilities in professional, educational, and technical matters. We have done much to put our house in order to meet post-war conditions, and we view the problems of the future with full confidence and its opportunities with eager anticipation.

Thoughts on Post-War Planning

The following discussion took place on the Paper by Mr. **J. H. Chapman**, of Swansea, to the Wales and Monmouthshire Association of Gas Engineers and Managers—see "JOURNAL" of June 6.

Mr. W. T. KENSHOLE (President) said it was difficult to see any way out of the problem that so often arose when the roads on new housing estates were almost finally made up and the gas undertaking had the heavy cost of making crossings. He recollected one particular case where, in anticipation of the development of a big estate, his undertaking put a main across a road that had not been finally made up. Then the building authorities came along, put down the hard core and ran a heavy roller over it, with the result that the main was damaged. Mr. Chapman had rightly stressed the question of industrial sales, and in that connexion they had been given some indication of the way in which the matter was to be handled by the excellent Address given by Mr. Sylvester to the Southern Association a fortnight earlier. As Mr. Sylvester had pointed out, it was essential that every load should bear its full share of the cost of distribution. Certain difficulties to which Mr. Chapman had referred were perhaps inevitable. Some time ago at a factory in his area plant had been put in, the constructors of the plant had left, and the ordinary factory technicians put the apparatus into operation. The thermostatic device was electrically controlled, but it was not functioning properly, and the result was that they had very big overloads which affected other parts of the factory. He suggested that one way of keeping track of such matters was to keep a census of apparatus installed and apparatus working. He was in agreement with what Mr. Chapman had said about the commercial uses of gas, and especially about the economy in the use of oil in speedily heated pans. In his district they had a fish and chip fryer who went over from solid fuel to gas, and at the request of the owner they took particulars of the gas consumed and the oil used, and compared them with his previous figures. The fryer was agreeably surprised at the enormous saving in the amount of oil. The owner was also in a better position to cope with his rush-hour trade, and at the same time he showed a substantial decrease in fuel costs per unit heated.

Mr. O. P. CRONSHAW (Rhyl) said they must increase their technical education on the distribution side. North Wales was still a playground for the hard working people from the south, and in that sense they were not so industrially developed. They were mainly concerned with the domestic side, and the grouping together of the commercial users was therefore a point which they would keep in mind.

Mr. J. POWDRILL (Pontypool) said that in his district it had been arranged that conduits should be prepared for service pipes in roads which were in process of construction. No highway authority wanted people coming along and breaking up newly made roads, which could not be properly reinstated, and it was advantageous to every undertaking to make plans before the roads were completed. There was one vital factor on which he could never seem to get information, and that was load factor in relation to distribution, and he felt there had not been enough work done in the Industry on that point. In the industrial areas they all had their heavy industrial loads, and with careful planning and adequate money they were easily dealt with. It was only a matter of planning mains to provide what he called a basic load factor, particularly if they could get industries on 24-hour loads. In the Pontypool area they were developing rapidly, both industrially and domestically, and it had been a matter of concern to provide for heavy industrial loads interlinked with fluctuating loads, particularly as the industrial loads often came on the outskirts of the distribution system. He had come to the conclusion that one must develop a high pressure system in conjunction with low pressure trunk main feeders to the district, whereby it would become comparatively easy to balance basic load factor against variable load factor. He was afraid most of the industrial districts would have to alter their conception of the distribution system, and a double distribution system would have to be developed and interlinked to help both the basic and fluctuating load factors.

Mr. E. M. EDWARDS (Port Talbot) said that with coal at 50s. a ton, containing approximately 300 therms, the cost of their raw material was, say, 2d. per therm, and the problem they had to face was how to treat that fuel and distribute their product at the lowest possible figure, and at the same time leave sufficient margin in fixing the price to afford the consumer the service Mr. Chapman so rightly stressed. The gap between the initial 2d. and the final 1s. or 1s. 3d. per therm was a large one, and as competition was going to be intensified they must study it very carefully and see how they could improve upon it. One of their troubles was that far too much money was spent on manufacturing and distribution plant that was idle for the greater part of its normal life. Taking 10,000 consumers in a South Wales area, he calculated that in the 10 minutes of the Sunday peak load they took about 15 cu.ft. per consumer per hour. The figure might vary from one undertaking to another from about 9.8 to over 20 cu.ft., but for the purpose of argument they could take 15 cu.ft. as the maximum demand. That meant that the distribution system had to be capable of taking 3.6 million cu.ft. per day, or roughly 1,314 million cu.ft. per annum, yet probably the total annual sales of that undertaking were only something like 200 million cu.ft. One solution would be to have a number of district balancing holders, whereby the gas could be sent out from the works at a steady pressure throughout the 24 hours and the district holders could take up the peak loads.

Mr. S. D. COOLE (Barry) said too many people imagined that the Gas Industry was fighting a losing battle, and a matter that each undertaking must tackle was to invest the Industry with something of the glamour that the younger industries possessed. Their showrooms were not always all that they ought to be. They should be clean, well furnished, and well equipped. They should endeavour to get senior boys and girls interested in the service in the showrooms.

Mr. ROUNDS (Cannon Iron Foundries) said he had seen a great deal of what the Army workshops had done, and he thought the Industry would gain tremendously if it could have full-time representatives to whom the fitters could go for a refresher or any other type of course. The R.A.S.C. workshops had produced some amazing results, and if similar means of training were adopted in the Gas Industry he was confident that the results would be of great value.

Mr. OWEN EVANS (Wrexham) said he thought they should have a lead from headquarters as to the laying of mains for new housing estates. In his own area they were to have some temporary houses, to last about 10 years, and it would probably cost the undertaking from £1,000 to £2,000 to lay the mains for 100 houses. He doubted whether it was going to be a paying proposition, yet they must give the service. The cost of main laying to-day was appalling; the cost of pipes and material had not gone up a great deal, and labour was about three times as much as before the war. In many cases he thought they charged too low a rate for industrial and some commercial purposes. Too many people compared fuel costs without realizing all the services involved, and in that respect there was a great deal of difference between gas and electricity. The electricity industry was getting a good margin on its industrial load, and on the other hand was selling electricity for domestic purposes at much lower rates than their actual production costs. In his area they were selling electricity for water heating at a third of a penny, although their actual costs were a penny a unit.

Mr. E. ABLETT (Swansea), referring to supplies to new housing estates, said that to be fair to their colleagues in the local housing authorities they must admit that the borough architects and engineers were themselves facing great difficulties, because the Ministries had been unable to make up their minds as to what type of houses they were going to adopt or how they were going to develop this or that housing estate. In order to be as co-operative as possible and in order not to lose any possible business they at Swansea had decided to put mains across roads—and those roads were being concreted—on all the new housing estates, taking the chance that they were going to get the business ultimately. They had already had one fruitful result of that policy, because an estate originally scheduled for permanent houses had been changed to an estate for temporary buildings, and the Borough Engineer recently notified them that the temporary houses were to have gas appliances. The life of the houses was given officially as 10 years, but he thought it would be found that most architects and engineers were visualizing a life of 30 years. If they had a life of 30 years it would not be a bad proposition, particularly bearing in mind that these temporary houses did not contain any solid fuel-heating alternatives, so that the value of a cooker in such a house was going to be very much higher than in the ordinary house which had alternative means of heating and cooking.

Major E. IVOR DAVID, Regional Gas Officer, said that in the matter of distribution it would pay the Gas Industry to consider what had been done in the electrical industry. Electricity distribution was

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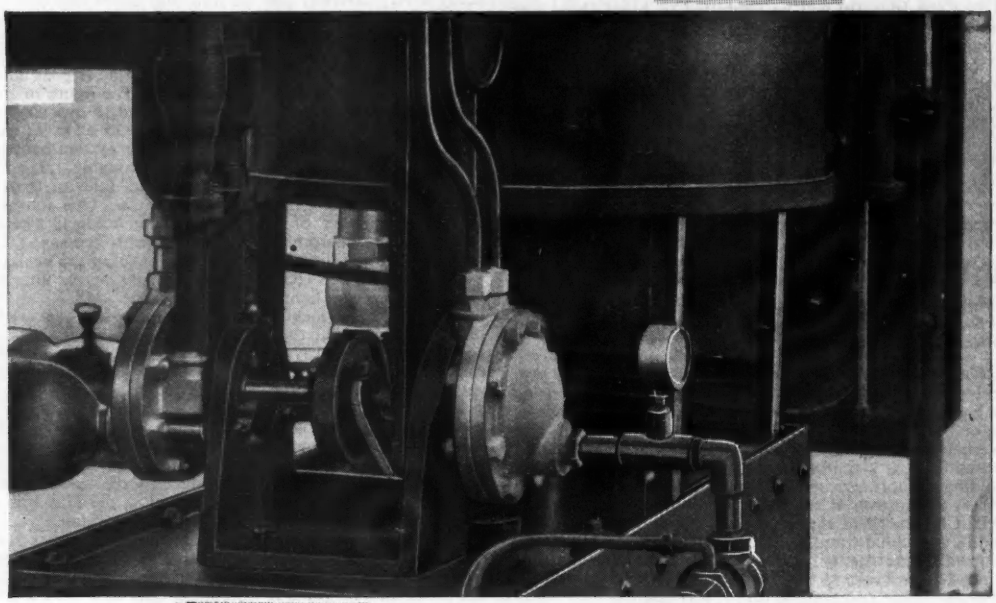

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entirely by high pressure mains connected to sub-stations which fed small low pressure distribution systems. They had never attempted to carry their main load by low pressure system. If electricity had a peak load corresponding to that quoted by Mr. Edwards the industry would have to have plant equivalent to the 1,314 million cu.ft. per annum in order to meet the 15 cu.ft. per hour per consumer peak load. On the question of main laying, he suggested thrust boring as an alternative to the expensive excavation and reinstatement of roads, at any rate for mains up to 12 in. He believed that the Gas Industry would benefit substantially from the conversion to peacetime purposes of the mechanical devices that had been so highly developed during the war.

Mr. J. F. RUST (Newport) said that originally they had mains along the middle of the streets at Newport, but gradually over the last 30 years they had put feeder mains down both sides of the streets, taking feeder mains across at various places when the roads happened to be under repair.

Mr. CHAPMAN, in a brief reply, referring to the question of peak loads, recalled that one of the strong points in the Paper on "Area Gas Supply" presented to the Association was that in any grid system for South Wales the member undertakings must take gas at standard rates for the whole of the 24 hours. Each undertaking must provide its own storage.

A vote of thanks to the Author was proposed by Mr. B. J. BELL (Cardiff) and seconded by Mr. W. F. EDWARDS (Bridgend), to which Mr. CHAPMAN briefly replied.

Society of British Gas Industries

The following is the Fortieth Annual Report of the Council on the work of the Society of British Gas Industries for 1944–45.

It is with the greatest pleasure that the Council is able to announce that Sir Francis Joseph has very kindly consented to serve as President of the Society for a further year.

The Council has met at regular intervals throughout the year under the Chairmanship of Mr. R. B. Potter. In the Spring of 1944 the Society suffered the grievous loss of their Vice-Chairman Elect, Major A. L. S. Wood, and Mr. Lawrence Bratt accepted nomination to that office in his place.

The Gas Industry

Two very important Committees have been appointed during the year by the Minister of Fuel and Power, firstly the Committee of Enquiry on the Gas Industry, under the Chairmanship of Mr. Geoffrey Heyworth, and secondly the Fuel and Power Advisory Council, under the Chairmanship of Sir Ernest Simon. The Society's Council by invitation submitted evidence to the Enquiry Committee dealing with the activities of the Society and of the Society's members. This evidence stressed the importance of the part which the Gas Industry must play in any national fuel policy which might be evolved, on such grounds as high efficiency of conversion of coal into refined products, gaseous, liquid, and solid, and the supply of cheap and convenient smokeless fuels for domestic and industrial uses. Taking into consideration firstly the limited amount of money which can be expended on fuel of various kinds by the vast majority of the population, secondly the growing demand for modern cooking equipment, improved room comfort conditions and continuous hot water supply, and thirdly the paramount need to lighten the burden on the housewife, the belief was affirmed that the twin fuels of the Gas Industry, gas and coke, offered an unequalled overall service whether looked at from the viewpoint of national fuel conservation, cheapness, or convenience to the consumer. Provided that the consumer was given his or her traditional right of freedom of choice, complete confidence was expressed in the future demand for the irreplaceable products of the Gas Industry.

Within the Councils of the Industry, careful consideration has been given during the year to the future organization of the Industry, and in particular of the Industry's national organizations. In regard to the formation of the proposed British Gas Association, it seems now to be generally recognized that while the interests of the Supply and of the Manufacturing sides of the Industry are in many respects common and there is a strong mutual desire to work in complete harmony, the composition and functions of the bodies representing the Supply side differ so fundamentally from those of the S.B.G.I. that it is very difficult to create an organization such as the proposed B.G.A. which can in all cases represent both satisfactorily. On the undertakings side a step of the greatest importance has, however, been taken in that a British Gas Council has been formed under the Chairmanship of Mr. A. E. Sylvester, to represent both the National Gas Council and the British Commercial Gas Association.' The decision as an administrative and practical step is one with which the Society's Council is completely and wholeheartedly in sympathy.

Home Trade

The Society during the year has continued to maintain the closest possible contact with the various Government Departments responsible for the exercise of control over raw materials and the instruments of production. In addition, the Society has sought to keep in the closest touch with Government plans for post-war reconstruction, so far as they affect the interests of the Society's members. At the request of the Government Departments concerned the Society has during the year conducted a number of surveys covering different groups within the Society, as the result of which reports have been prepared to show the resources and capacity that will be available for peacetime production. The extent to which production has been diverted of latter years to war work varies in different branches of the Industry, but in some groups the diversion has been as high as 90% and over. The purpose broadly of the surveys which the Society has conducted and of the reports which have been prepared has been to provide the Government Departments concerned with the fullest possible information as to the requirements of the Society's members, so that steps may be taken to co-ordinate these requirements with those of other industries in the reconstruction period, and so that the necessary labour and materials may be made available for the conduct of Gas Industry business. It has been the Council's view that whatever the future might hold in regard to a number of problems facing the Industry, their prime objective must be to seek to ensure that in the change-over from war to peace the Society's members were well placed, and at least no worse placed than any other comparable industry. That objective by and large seems to be in a fair way to be achieved. Already release has been obtained from such restrictive influences as quotas under Limitation of Supplies Orders and special wartime specifications, and in these and other ways the ground is already well cleared for a major move forward, more particularly in those branches of the Industry where the diversion to war work has been heaviest. An increase in the availability of labour which in turn depends upon the degree of improvement realized in the military situation should find quick and ready reflection in the output of the Society's members.

During the year, official sponsorship in connexion with labour and materials has been transferred in the case of domestic meters and all appliances from the Ministry of Fuel and Power to the Board of Trade. A Directorate of Housing Fitments has been created in the Board of Trade, and the production of domestic meters and appliances is now fully recognized as an integral part of essential production for the housing programme. The housing programme and all production associated with it seem destined to receive a higher priority than any other production for civilian requirements.

Export Trade

During the war years the Gas and Coke Oven Industries Export Group, which the Society staffs and administers, has been in active operation. The Group has three Sub-Groups covering respectively Plant, Appliances, and Meters. Prior to the War the volume of exports effected by the Society's members exceeded £1,000,000 annually, leaving out of account large contracting projects which from time to time were undertaken in other countries for the gas and coke oven industries. There seems no reason to doubt, starved as normal markets have been of the flow of exports from this country during the war years, that in the early post-armistice years the Society's members should be able to make a useful contribution to the flow of international trade. Already the curve of export business within the Group shows a marked upward tendency. For the present, however, control remains, but the Group has the necessary facilities and channels through which to handle all export business coming within the orbit of its activities, and its services are available to all the Society's members.

Gas Research Board

The Gas Research Board is now in its sixth year, and is doing everything possible to overcome those handicaps which are associated inevitably with the full development of such an organization in time of war. The greater part of the research work is being carried out at the University of Leeds and in the Imperial College, London University, since so far it has proved impossible to provide the central headquarters which are so necessary for the proper development of the organization and its programme. A highly skilled team of research workers is, however, being built up, which in due time should provide the best possible nucleus for the expansion of the Board's organization to a size commensurate with the scope of the Industry which it represents. Progress is being made in the co-ordination of research work with development and service laboratories and with the manufacturers of plant and appliances. An Intelligence Section which has been created has been engaged upon the establishment of a library, and has formed a liaison with the intelligence sections of other organizations which deal with fuel problems. This Section will deal with all the intelligence work for the Board's research staff and will also provide information on request to the members of the Board. The three most important researches on which the Board is at present engaged are the gasification of coal in hydrogen under pressure, methane synthesis, and the removal of organic sulphur compounds from town gas and synthesis gas. Semi-scale experiments are in progress at several works. A general programme of research work on a number of gas utilization problems has been started.

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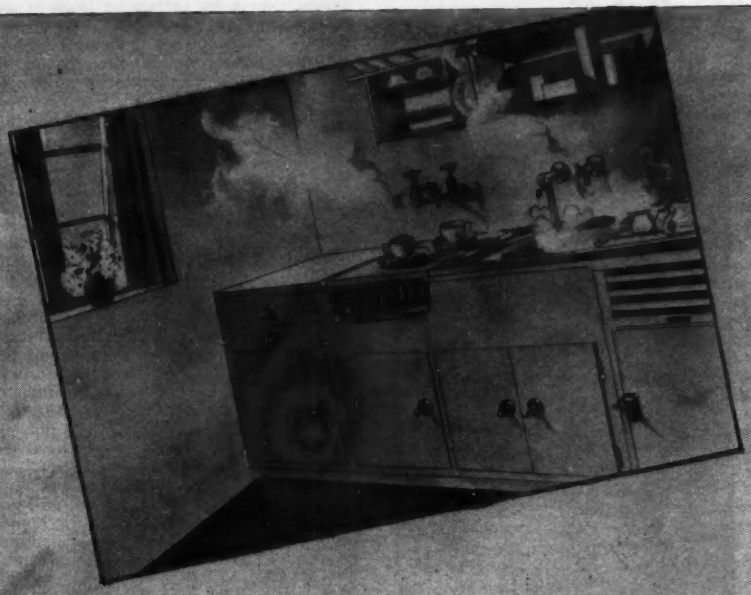

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Broadly speaking, the guiding principle of the Board is that it should seek to plan wisely for research on an adequate scale to meet the requirements of new techniques and new developments; the central research establishment must be started on a plan generous enough to accommodate many years of growth. Six representatives of the Society are serving on the Council of the Board, and it is hoped that more members of the Society will become associated with the work of the Board by applying for membership.

General

The White Paper entitled " Employment Policy" issued during the year reviewed the transition from war to peace against the international and industrial background. There would be no problem of general unemployment in the years immediately after the end of the war in Europe. In this transitional period our national problems, though no less difficult, would be different. It would be a period of shortages. Exports were to have first priority, essential civilian requirements came second, and capital equipment third. The chief concern of the Society's Council is that the productive capacity of the Society's members should be at the disposal of the Gas Industry. Ways and means to this end have been the subject of constant study during the year. "In order to direct the efforts of industry towards the right tasks in the right order," says the White Paper, " it will be necessary to establish certain broad priorities and to enforce them for a time by means of licences, the allocation of raw materials, and some measure of control over the labour and staff required for industry." That is the framework into which the activities of the Society's members in 1945 will have to dovetail. The Council would, however, emphasize how serious are the effects of any restrictions which reduce production below an economic level. Controls on raw materials and labour, on production itself, on selling, on export and on transport, all tend in this direction. Once production commences, fixed overheads are largely independent of output, and these, always a large item in modern manufacture, have to be carried on the actual output. If the output be low, the consequent increase in costs tends further to reduce sales, and commences a vicious circle which may be disastrous to trade and employment. The Council, while recognizing that some controls must continue for a time, would therefore urge that they should be reduced to a minimum.

Granted the imperative need there will be in the early post-armistice years for increased exports, for plant and capital equipment for the Gas Supply Industry of this country, and for equipment and appliances in connexion with industry, and the housing and re-housing of the population, the Council believe such preliminary steps as it has been possible for them to take during the year under review are important, and will prove of value to the Society's members in the transitional period from war to peace which lies ahead, difficult as must that period almost inevitably be.

It is a matter of vital importance to the Society's members that the Gas Industry, of which they form part, should prosper in the service which it seeks to render to the community. On the undertakings side steps have been taken during the year to strengthen the organizations which represent their interests on a national basis. The Council are convinced that the Society's own organization must be strengthened, and in thanking the members for their support of the Society during the war years, it is the hope of the Council that the same support will be accorded in the early post-war years to such steps as it may be found necessary to take within the S.B.G.I.

A National Safety Congress organized by the Royal Society for the Prevention of Accidents will be held in London from June 18 to June 24. Particulars are available from the Society at 52, Grosvenor Gardens, S.W. 1.

The Proposed Conference organized by the Clyde Valley Regional Planning Advisory Committee was held on June 1 and attended by representatives from the various private and publicly owned supply organizations in the Clyde area. The meeting considered the possibility of forming a gas grid supply system in the area, and the various viewpoints which were expressed went some way towards the clarification of the position. As a result of the meeting it was agreed that engineers of the several organizations present should meet in groups to prepare reports which would be submttied at a later date. These reports would prepare the way for a study of the regional gas supply to the entire Clyde area.

Nearly 80 Years' Experience in the design and manufacture of instruments for the regulation of gas pressure and volume lies behind the publication of Peebles Gas Governors, a new 24-page brochure, by Peebles & Co., Ltd., of Tay Works, Bonnington, Edinburgh. Descriptions are given of several varieties of station governors, including mercurial, pressure loaded, self-loading, and self-loading automatic, and special attention is given to the patent clock control for gas governors which, acting upon a small pilot governor, alters the pressure to be thrown by the main governor as desired. The functions of retort house governors are also discussed, and particulars are given of the automatic safety relief valve for retort houses, district governors, the patent three-way valve specially designed to meet the case of a duplex service with high and low pressures, and the differential and proportional reducing valve, which reduces pounds pressure to inches water gauge in definite proportions. A foreword points out that new apparatus and improvements as research experiments or experience suggest are constantly brought out.

Expanding the Distribution System*

By A. G. HOLTAM,
Cheltenham and District Gas Company

THERE is, I well know, more than one prospective cause for anxiety on the part of a gas distribution engineer, but probably the oldest and most persistent is the problem of meeting the maximum momentary demand for gas. In more peaceful days it was possible, at reasonable cost, by laying new mains here and replacing with larger mains there, to hold in hand steadily increasing demands that could be estimated for some years ahead with reasonable certainty. In these hectic days, however, estimating maximum demand is a hazardous occupation, and the surplus of to-day can be the deficiency of to-morrow.

The life of a pipe system should be anything from 40 years upwards, and an under-estimation of requirements can waste capital in proportion to the time by which the capacity of the selected size fails to last the mechanical life of the main, except, of course, the fact that in the early years the full capacity of the pipe would not be wholly employed. Until quite recent years the almost standard method of distribution in England has been by low pressure of a few inches water gauge. The system is certainly trouble-free, and could be afforded in the past due to the low cost of labour and materials. However, judged by modern methods and recent experiences, I hardly think it can be described as flexible in respect of its ability to meet increasing maximum demands. The prescribed limitation of a maximum variation of 20 tenths inches W.G. at consumers' meters places a definite ceiling upon the hourly rate of which such a system is capable.

The present position is that many undertakings are faced with a maximum momentary demand which makes compliance with the 20 tenths variation limit difficult or impossible. The first requirement of every distribution system is that the consumer must have ample gas at the meter at all hours. Secondly, the pressure variation at the meter must be held within reasonable limits. There are other considerations of course—soundness, ease and low cost of maintenance, freedom from failure, and so on; but no matter how perfect it may be in these respects, there can only be one ultimate measure of success. The customer must have ample gas.

Each distribution system has its own peculiarities and problems, and each local engineer must be the judge of his system's success or failure. Violent increases in the maximum momentary demand during January were, I believe, common to all of us, and the cause in each case was probably the same. Shortage of solid fuels combined with very cold weather brought many extra gas fires into use to be superimposed upon the cooking load, and each one of us can make his own guess as to whether the same combination of conditions will recur next winter. It can well be understood that even if labour and material were available at the present time, an undertaking would prefer to defer as much work as possible until post-war conditions can be more accurately assessed.

During the war years it has been impossible to carry out improvement work to cope with even normal increases, and a good deal of leeway will have to be recovered. Every undertaking should have, and probably has, a long term plan, which ensures that every job of work undertaken fits in as part of the final plan, even though it proves impossible to carry it out other than piecemeal. I can hardly imagine that the end of the war will see us clear of control of labour and material, and I suggest that no matter how perfect the eventual scheme, it will fail in its purpose unless in the very early stages it brings relief to those consumers suffering from inadequate gas supplies. If this can be accomplished only by means of a temporary expedient, then in my view the expedient should be adopted.

Each one of us will have his own problems, but in general it will perhaps prove that any difficulties that exist at present may be due not only to trunk and subsidiary mains, but also to individual services. Even an absence of complaints cannot be accepted as an "All Clear" signal. I have proof that some consumers suffer in silence with a purely local stoppage, thinking that the trouble is general and due to gas shortage, &c. The number has been increased due to the January radio appeals for fuel economy. The present staff position prohibits rapid systematic service testing, but the poorly supplied consumer, although at the moment patient, will remember, and can be expected to react violently to our disadvantage as soon as in his opinion any reason for a poor supply becomes invalid.

A frequent first move is to install fans at the works to increase holder pressures, and I can well imagine that the initial pressures found necessary this past winter have been the cause of a good deal of chin stroking. What other methods are there for further increasing the capacity of the distribution system with an eye still further to increase in the future?

District Storage

Only by strategic siting can storage be utilized to the advantage of distribution. To assist an existing system it is necessary to site the holder in the locality needing assistance, or to obtain a site as near as possible to the locality, and lay large capacity mains from holder to

* Paper to the Western Junior Gas Association.

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the locality. Except where a system has been deliberately planned for the later addition of district holders, a considerable amount of mainlaying will usually be necessary. There may be more than one locality requiring assistance, and this would involve either more than one holder, or even higher mainlaying costs. It is also essential that the existing local mains should be of ample capacity to receive the gas in store.

Finding a suitable piece of land upon which to erect a holder may prove to be the more simple of the requirements to be satisfied before erection can proceed. The legal difficulties may often prove insuperable. In urban areas it is no mean undertaking to overcome the preliminaries.

Providing the mains system does lend itself to district storage, then its great advantage lies in its ability to help flatten out the peak demand pressures and improve the daily load factor. Credit can also be taken for its storage capacity as such.

New Trunk Mains

The cost of mainlaying, including reinstatement of modern roads, has increased so greatly in recent years that new large low pressure mains have become a luxury. Of course there are cases where the existing systems particularly lend themselves to a continuance of this method, and where the cost may be justified. Speaking generally, the economics of a mains system should be related to the cost per cubic foot of hourly gas transmission capacity. On this basis a large low pressure main can only occasionally be justified. Apart from costs, there is the difficulty of finding room for the large inflexible pipe in crowded highways, and the fact that it can usually be of benefit only to those districts through which it passes, unless it is to discharge into existing large mains. However, it has the merit of long trouble-free service.

With higher pressures the capital cost per cubic foot of hourly capacity is considerably reduced, even including cost of pressure raising equipment, governors, &c. Due to the smaller diameter, accommodation is much more easily found, and every district governor supplied from it is the equivalent of a small, or not so small, holder. Compared with the low pressure main there is great flexibility in capacity. There are, of course, comparative disadvantages: the costs of pressure raising, possibility of mechanical faults and consequent failure, and maintenance and accommodation of district governors. Due to the recent Town and Country Planning Act, governor accommodation above ground has become a difficult matter. I can hardly believe that the Act was intended to defeat good engineering principles.

The cost of gas can be so affected by the cost of mains that it is increasingly likely to be the deciding factor as between high or low pressure bulk transmission, especially as the maximum rates of flow usually exist for only an hour or so daily.

Adaptation of Existing Trunk Mains

Probably the cheapest method of increasing bulk transmission of gas into an urban district is by adaptation of an existing trunk main for medium pressures. At moderate cost the capacity of the main can be increased many times and can be an excellent investment. The work is greatly facilitated where accurate mains records have been kept, but even without these, careful and patient investigation will be well repaid in the event of the project being proved practicable. Besides the designing of the adaptation on paper, the main should be exposed in places, the joints examined, the pipe drilled, and the condition of the walls and internal condition determined. Investigation must be made of the branch mains to ensure that there is room for governors or valves, and all services off the main fitted with service governors. The method has the advantage that the increased quantity of gas takes a route which has normally been designed in the past to pick up reasonably large branch mains. On the other hand, unless a large number of district governors is used, some of the branch mains will be lost due to valving. One of the most irritating difficulties when converting from low to high pressures is due to the accumulation of dust, but it is my experience that this soon subsides.

With any of the foregoing methods of increasing mains capacity, be it district storage, new low or high pressure trunk mains, even if these take the form of a ring main, or, to a reduced extent, an existing low pressure trunk main adapted for boosting, there is a probable and important difficulty that may cause disappointment, which even at the expense of repetition needs emphasizing. Once the holder has been erected, or the high pressure or booster mains completed, the purpose of the potential capacity created may be frustrated by inadequately sized subsidiary mains and services.

It is possible that, especially in the older part of a town, there are long streets of terraced houses served by 3 in., yes, even 2 in. mains which, although sound, are quite incapable of passing sufficient gas without severe pressure losses. Add to these even a few inadequate or corroded services, and it will be obvious that it is impossible to reduce general pressures at peak loads to anything like an ideal level, and at the same time maintain a pressure at the meter capable of supplying sufficient gas to the appliances *via* possibly equally inadequate installation pipes. This may be a black picture, but not a fanciful one. Even under much better conditions, unless there are substantial-sized mains leaving the holder or feeder main and penetrating well into all the areas, it may be found impossible to get away anything like the amount of gas anticipated.

Replacement of small mains and services will be much more costly than formerly, and at present impracticable. To put its house in order an undertaking may require two or three years, and no substanital start can be made yet. If service to the consumer is to be something more than lip service, how can this much-needed time be gained?

Service Governors

No doubt there are undertakings which could claim that at no meter position does pressure vary by more than the recommended liberal maximum of 20 tenths, but my guess is that by far the majority could not. But how many could claim to keep within a range of a few tenths? Yet a service governor would accomplish this, providing, of course, a sufficient pressure always prevails at its inlet. Governors with compensating diaphragms and suitable for up to 15 or 20 in. inlet, size 1 in., and fitted with meter unions ready for simple insertion with a spanner between existing boss and nut of meter inlet can be obtained at the present time, which, including fittings, should not exceed 18s. per installation. Allowing for some larger sizes, average cost per consumer should be about £1. This, together with a general rise in pressure from holders or booster fans, would at any rate quickly give the consumer an ideal service, and the undertaking time in which to assess post-war requirements and carry out more ambitious schemes. It may be profitable to economize by using district governors to some districts. Admittedly there are other considerations, and I refer to them briefly as follows:

Providing mains are sound and peak pressures do not exceed, say, 20 in. no work on mains is involved. The method overcomes small trunk and subsidiary mains and services—a most important point. Even if booster mains or other methods are found to be necessary and adopted later, the service governors are a permanent asset. There will be a pressure loss across the governor, and it must be carefully selected and give ample capacity at a reasonable differential pressure. Complete cut-off is not so important as with high pressure. Some slight rise in unaccounted-for gas due to leakage may be expected, but loss due to meter measurements at excessive pressure will be reduced. Maintenance of governors is involved, but my experience is that the cost is negligible and is more than recovered by reduced complaints and maintenance of appliances. Some initial trouble from dust can be expected. Where mechanical pressure raising is necessary, maintenance and running costs are involved.

While there is a practical ceiling to pressures, and therefore a limit to capacity, it can be safely used to cover peaks up to, say, three times the original capacity of the system. How much of this increased capacity you have already taken without service governors is another matter.

If the districts around the works are completed first, early partial advantage can be taken of the scheme. One or more distant pressure indicators can reduce boosting costs and general pressure levels to the lowest practicable. In my opinion, where applicable the method has considerable attractions, especially at the present time.

The Sales Office and Showrooms of Messrs. Ewart & Son, Ltd., have been transferred to 169, Regent Street, London, W. 1 (Telephone, Regent 6411 ; telegraphic address, "Geyser, London"). The accounts and works department remain at Works Road, Letchworth, Herts.

One of the Most Interesting features of an ambitious and successful Education Week at Watford was an exhibition staged by local manufacturers to give to the public, especially the youth, of Watford an indication of the wide variety of products made in their home town. The Watford and St. Albans Gas Company's exhibit showing many of the by-products of coal and, in another section, the industrial apparatus made and installed by the Company attracted considerable attention. Folders giving details of the Company's educational scheme were handed to teachers and scholars, who formed parties each day to visit the exhibition. The Minister of Education, Mr. R. A. Butler, visited the exhibition and congratulated the manufacturers on the skilful presentation of the show from the educative point of view.

We have Received from the Publishers a copy of Vol. 28—covering the year 1943—of the *Reports of the Progress of Applied Chemistry* issued by the Society of Chemical Industry. These Reports have always proved a valuable reference, and the present volume maintains the high standard of its predecessors. The section on " Gas, Destructive Distillation, Tar, and Tar Products " is contributed by F. J. Dent, A. Key, L. A. Moignard, and E. W. Claydon; while that on "Acids, Alkalis, Salts, &c." is by P. Parrish and F. C. Snelling.

The Imperial Continental Gas Association has resolved that for the year ended March 31, 1945, an ordinary dividend of 3½% and a special dividend of 6½%, both less income tax, making a total of 10% (actual) less income tax, be paid on the £5,600,000 Capital Stock on June 29, 1945, to proprietors registered in the books at the close of business on June 1. The net profits shown in the accounts for the year ended March 31, 1945, after providing for taxation, amount to £243,936. Of that sum £105,103 represents profits attributable to the year 1944–45. The balance of £138,833 represents the proportion of foreign income of previous years which it has so far been possible to convert into sterling. The proposed dividends, less income-tax, require £280,000, and necessitate the appropriation of £36,064 from the balance of profits brought forward from the previous year.

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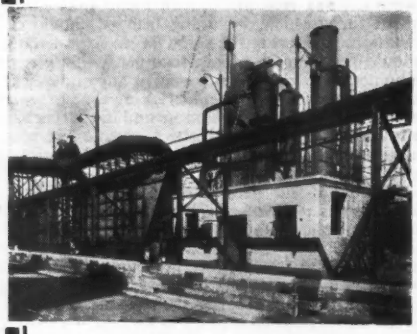

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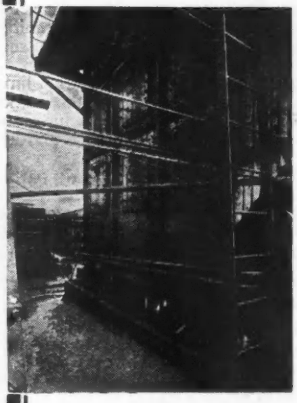

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Products Prices—Stocks and Shares

The London Market June 11.

As from March 5, by the Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), the maximum price of Pitch for briquetting has been increased to 60s. per ton f.o.r. supplying works, and the prices for Road Tar, as fixed by the Coal Tar Products Prices Order, 1943, S. R. & O. No. 1528, have been increased by one half-penny per gallon. There is also an increase of 5s. per ton in the price of standard Creosote/Pitch Mixture.

The prices of other products are unchanged.

Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172), is in force.*

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole, and calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

Control of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), contains an amendment of the Control of Toluene (No. 3) Order, 1943.

There is also the Control of Benzole and Coal Spirit (No. 2) Order, 1944 (S. R. & O., No. 988).

Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O., 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene.

* Slightly amended by Control of Benzole and Coal Spirit (No. 2) Order, 1944.

The Provinces June 11.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's. 2s. to 2s. 2¼d., pure, 2s. 9d. (now controlled by S. R. & O. 1944, No. 988, operative from Sept. 1, 1944. Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1, and S. R. & O. 1944, No. 988, part I, operative from Oct. 1, 1944, Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943, Naphthalene now controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

Attention is called to Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), referred to on p. 305, "JOURNAL" of March 7.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland June 9.

Inquiries for export are numerous. Refined tar*: Yield to Distillers is 5d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5½d. to 6½d.; hydrogenation oil,* 5⅞d.; low gravity or virgin oil,† 7¼d. to 7½d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

Although the turnover was small each day last week there was no lack of good features in most sections. The latest favourable dividend announcements gave a fillip to a number of industrial shares and more interest was apparent in the oil market.

There was a fair volume of business among gas stocks and shares, and it will be seen below that in contrast to the downward movements reported over the last few weeks the few changes last week with one exception were on the upgrade. Imperial Continental speedily recovered its *ex div.* reduction and closed 7 points higher. The small reactions in Gas Light units persist and at the current price yield 4½%.

The following is the list of price changes during the week:

OFFICIAL LIST

Associated Gas & Water Undertakings 4 p.c. Cum. Pref.... ...	19/3—20/3	+ 1/-
Barnet Ord.	162—167	+3
Brighton Cons.	108—113	+1
Colombo 7 p.c. Pref. (x.d.) ...	22/6—24/6	June 4
Commercial 3 p.c. Deb. (x.d.) ...	74—79	"
Gas Light Units	21/9—22/9	—/3d.
Imperial Continental	124—129	+7
Montevideo Ord.	88—91	+1
United Kingdom Gas Corporation 4½ p.c. 2nd Non-Cum. Pref. ...	20/6—21/6	+/6d.

PROVINCIAL EXCHANGE

Newcastle 3½ p.c. Deb.	100¾—102¾	+¾

TRADE CARDS

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Tyburn Road, Erdington, Birmingham 24. T/N East 0276-7. T/A Ether Ltd. Birmingham.

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COMPRESSORS, EXHAUSTERS, VALVES, GAS GOVERNORS & REGULATORS, BOOSTERS.

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"THEORY OF INDUSTRIAL GAS HEATING," by Peter Lloyd. Second Edition. Completely revised and greatly extended.

Price 7s. 6d. post free; 12 copies, to one address, 75s.

60% Sulphur absorbed by our

OXIDE

which has stood the test of 60 years.

Minimum Costs, Highest Efficiency

ESTABLISHED 1873

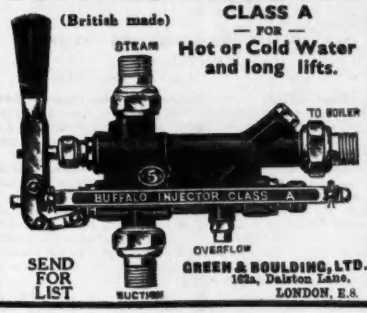
GAS PURIFICATION & CHEMICAL COMPANY LIMITED

PALMERSTON HOUSE, 34, OLD BROAD STREET LONDON, E.C.2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

BUFFALO INJECTOR

(British made) CLASS A — FOR — Hot or Cold Water and long lifts.



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Porous and Light
Easy to Work

A War Time Economy of Labour

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T.I.G.B. Students have gained 29 FIRST PLACES and Hundreds of Passes in the Examinations for A.M.Inst.C.E., A.M.I.Gas E., A.M.I.Chem.E., A.M.I.Mech.E., A.M.I.E.E., C. & G., etc.

Qualify Now by Home-Study with the T.I.G.B.

The Department of Fuel Technology covers **Gas Supply, Gas Engineering, Gas Power, Engineering,** and the **Certificates of The Institution of Gas Engineers.**

Write to-day for "Engineer's Guide to Success"—FREE—containing the world's widest choice of engineering courses—over 200—and which alone gives the Regulations as to admission to various examinations such as A.M.I.Gas E., A.M.Inst.C.E., A.M.I.Mech.E., A.M.I.Chem.E., C. & G., &c. The T.I.G.B. guarantees training until successful.

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—THE COOKER CLEANER

Tins for Sale to Consumers. In Bulk for Works Use

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Telephone: Mansion House 1156. Telegrams: "Balefire, London."

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Sole Makers of the "P.M" semi-water Gas Plant.

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ROBERT DEMPSTER & SONS, LTD., ELLAND, Builders of CARBONIZING PLANTS, both Horizontal and Vertical. Manufacturers of CONDENSERS, PURIFIERS, GAS-HOLDERS, &c., also every description of COAL and COKE HANDLING PLANT. *Telegrams:* "Dempster, Elland." *Telephone:* Elland 2241, 2242 and 2243.

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GAS RETORTS In BEST STOURBRIDGE QUALITY also SILICIOUS QUALITY 81% SILICA

HIGH GRADE INSULATING QUALITY FIREBRICKS

REGENERATIVE TUBES & TILES

HEMP GRUMMETS

Millions Sold. Ask for Samples.

A. WITHINSHAW

Hellier Street, DUDLEY, Worc.

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THE WORLD'S FINEST

FIRE-PROOF NON-CONDUCTING material for

GAS PLANT

of every description

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54/5, LONDON WALL LONDON, E.C. 2 T.N. City 4818

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70 & 72, Chancery Lane, London, W.C.2.

Telegrams: "Patent, London." 'Phone: Holborn 0437

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(Director, B. T. King, A.I.M.E., Patent Agent)

Advice, Handbook, and Consultations free. 146a, Queen Victoria Street, London, E.C. 4. Phone: City 6161

PLANT &c. FOR SALE & WANTED

'Phone 98 Staines.

FOR SALE.—Cylindrical Receiver 30 ft. by 7 ft. dia.; 100 lb.; Cornish Boiler, 3,300 lb., evaporation 140 lb. w.p.; Weir Feed Pump 8¼ in. by 6 in. by 13 in.; Weir Feed Pumps (2) 5 in. by 3 in. by 6 in.; Weir Service Pump 6,300 g.p.h.; 7 h.p., 25 h.p., and 40 h.p. Crossley Gas Engines; Tangye 3-Throw Ram Pump 5 in. by 8 in.

HARRY H. GARDAM & Co., Ltd., Staines.

ANVILS. New, All-steel, London Pattern, for sale from stock. In sizes 28 lb. to 3½ cwt. Very keen prices. Ask for leaflet.

GEORGE COHEN, SONS & Co., Ltd., Wood Lane, London, W. 12. Telephone: Shepherds Bush 2070.

THE AIR MINISTRY has available for disposal a number of PLANTS designed for the PRODUCTION OF HYDROGEN at various locations in England, Scotland, Northern Ireland, and South Wales.

The plants are of varying production capacities and comprise in the main hydrogen generators; blue water-gas plants with auxiliaries; pumps with varying forms of drive; purifiers; boilers; and in some cases water softeners.

Each site has one or more gasholders of capacities ranging from 2,000 to 100,000 cu.ft., either column or spiral-guided and of welded or riveted construction. In addition, with the exception of two plants, gas compressors either electric or gas-engine driven are installed.

Plants will be offered for sale as complete installations and standing erected, but without guarantee as to serviceability or condition, and purchasers would be required to arrange for dismantling, loading and removing.

Certain of the plants will be broken down into their component parts, and offers will be considered for gas holder, blue water-gas plants, purifiers and other components as separate units.

Interested parties should apply in writing in the first place, stating briefly their requirements to the Under-Secretary of State, Air Ministry (C.19(*a*)), Kingsway, London, W.C. 2.

TWO Gas-Engine-driven Electric GENERATING SETS for immediate sale, in excellent condition. Full particulars on application to the Gas Company, Worcester.

WANTED.—Town's Gas-fired STEAM BOILER, 60-lb. w.p., 700-800 lb. per hour. Must be in good condition.

Engineer and Manager, Gas-Works, Worksop.

CONTRACTS OPEN

ILKLEY URBAN DISTRICT COUNCIL

(Gas Department)

TENDERS are invited for the Supply, Delivery and Erection of EXTENSIONS TO VERTICAL RETORT PLANT. Full particulars may be obtained from the undersigned.

Tenders in plain sealed envelopes endorsed "Vertical Extension" must be received by me not later than July 12, 1945.

The Council does not bind itself to accept the lowest or any Tender.

H. JACK, M.Inst.Gas E.,
Engineer and Manager.

APPOINTMENTS VACANT

ERECTION ENGINEER

THE Whessoe Company wishes to appoint to its erection staff an Engineer aged 25-35 with good theoretical and practical engineering training and experience in the site erection of steel plate and structural work and the installation of plant in the Gas, Oil and Steel Industries. Salary £400 and upwards according to Qualifications and Experience.

Applications should be made to the Secretary, The Whessoe Foundry and Engineering Co., Ltd., Darlington.

LEADING MECHANIC wanted immediately. Wages £6 10s. per week, and house at small rental. Apply stating Age, Experience, &c., to G. P. Mitchell, Managing Director, Worcester New Gas Light Company.

(Classified Advertisements continued on p. 768)

APPOINTMENTS VACANT (ctd.)

THE LIVERPOOL GAS COMPANY

APPLICATIONS are invited for Positions on the TECHNICAL STAFF of the above undertaking.

(*a*) Qualified and experienced CHEMISTS or CHEMICAL ENGINEERS with knowledge of fuel and of the Carbonizing Industry.

(*b*) In one case a similar person with a knowledge of Instrument Engineering.

(*c*) Persons with Carbonizing or Gas-Works experience between 20 and 30 years of age for training as CARBONIZING SUPERINTENDENTS.

The Salary will be in accordance with the qualifications in each case.

Application Forms can be obtained from the Personnel Superintendent, The Liverpool Gas Company, Radiant House, Bold Street, Liverpool, 1, which will be forwarded upon request, and which should be returned to him so as to arrive on or before June 23, 1945.

(*Issued by permission of the Ministry of Labour.*)

ACCRINGTON DISTRICT GAS AND WATER BOARD

GENERAL MANAGER

APPLICATIONS are invited for the position of GENERAL MANAGER of the Board's Gas and Water Undertakings. The Salary will commence at £1,000, and subject to satisfactory service will rise by five annual increments of £50 to a maximum of £1,250 per annum.

Particulars of duties and conditions of appointment may be obtained from me.

Applications for the position must be received not later than Monday, June 25, 1945.

Central Office, St. James's Street, Accrington. P. D. WADSWORTH, Clerk to the Board.

WANTED by Gas Undertaking in the North of England, ENGINEERING ASSISTANT capable of taking charge of the Drawing Office. Salary according to age and experience.

Applications, giving Age, Qualifications, &c., to No. 9440, "GAS JOURNAL," 51, High Street, Esher, Surrey.

CHELTENHAM AND DISTRICT GAS COMPANY

CHEMIST

APPLICATIONS are invited for the above Position at a Salary (inclusive of War Bonus) of £380 per annum. Applications addressed to the undersigned should be received not later than June 20, 1945, and should be accompanied by Testimonials.

North Street, Cheltenham. A. L. MORRIS, General Manager.

COUNTY COUNCIL OF THE COUNTY OF LANARK

(GAS UNDERTAKING)

APPLICATIONS are invited for the Position of TECHNICAL ASSISTANT in the above Undertaking.

Candidates should have had experience in the control of Vertical Retorts and should be able to carry out all laboratory work attendant upon the efficient working of the Plant in general.

The Salary paid will be according to qualifications and will fall within the County Council Scale, rising to a maximum of £250 plus £60 War Bonus at present.

Applications, together with *copies* of two Testimonials, should be sent to the undersigned not later than June 15, 1945. Applicants should indicate their positions with regard to National Service and the Essential Works Orders.

County Gas Offices, Uddingston, Lanarkshire. FRED R. MITCHELL, M.Inst.G.E., Engineer and General Manager.

WANTED.—Experienced GASFITTER. Must have knowledge of Water Heating Apparatus, and a knowledge of Gas-fired Central Heating Installation desirable. Standard rate of wages 1s. 9½d. per hour for 47 hours per week. The position is permanent for suitable man.

Apply in writing to The Engineer and Manager, Conway Gas Company, Ltd., Castle Street, Conway.

Corrected Advertisement.

BOROUGH OF BRIGHOUSE

(GAS DEPARTMENT)

JUNIOR TECHNICAL ASSISTANT

APPLICATIONS are invited for the Position of JUNIOR TECHNICAL ASSISTANT at a commencing Salary of £230 per annum, rising by two annual increments of £15 to £260 per annum, plus war bonus at present amounting to £59 16s. per annum.

Candidates should be able to carry out the usual routine tests, and should possess as a minimum the Ordinary Grade Certificate of the Institution of Gas Engineers.

Applications, stating Age, Experience, &c., accompanied by copies of not more than two Testimonials, should be sent to The Engineer and Manager, Gas-Works, Mill Lane, Brighouse, and should arrive not later than June 21, 1945.

Canvassing either directly or indirectly is prohibited, and candidates should state in writing whether to their knowledge they are related to any member of, or the holder of any senior office under, the Council.

Town Hall, Brighouse. ERNEST H. CLEGG, Town Clerk.

May 31, 1945.

MESSRS. NEWTON, CHAMBERS & CO., LTD., Thorncliffe, near Sheffield, invite applications for appointment as TECHNICAL ASSISTANT in their Chemical Engineering and Gas-Works Plant Department. This appointment will involve travelling to various parts of the country. Previous industrial experience and chemical plant operation will be an important advantage. Preference will be given to a young man with a science degree or equivalent qualification, aged 22 to 30. Apply in writing to the Personnel Officer.

DERBY GAS LIGHT AND COKE COMPANY

APPOINTMENT OF WORKS SUPERINTENDENT

APPLICATIONS are invited for a Position of WORKS SUPERINTENDENT.

Applicants must have had experience in a similar appointment, possess good structural and mechanical knowledge of modern plant, consisting of Vertical and Horizontal Carbonizing and C.W.G. Plants, and be able satisfactorily to control labour.

The successful candidate will be required to pass a medical examination.

Applications, stating Age, Training, Qualifications and Experience, together with *copies* of two recent Testimonials, should be received not later than June 25, 1945.

NOTE.—Position in relation to the Essential Works Order and National Service Acts should be stated.

Gas Offices, Friar Gate, Derby. C. H. MOSEDALE, Secretary.

WANTED.—Home Service Adviser, trained in Domestic Science. Good Cookery Demonstrator and Lecturer. Preference Ex-H.M. Forces.

Applications, stating Age, Experience, Training, Certificates held and Salary required with *copies* of Testimonials by June 30, 1945, to Manager, East Hull Gas Company, St. Mark Street, Hull.

PUBLIC Utility Company require a YOUNG LADY for General Office Duties in its London office. Knowledge of shorthand and typewriting essential. Hours 9.30 to 5. Good salary and comfortable working conditions. Write, stating Age, particulars of Education and Experience, if any, to Box E 793, Willings, 133, Moorgate, London, E.C. 2.

MECHANICAL SUPERINTENDENT required by large Works in London district to supervise maintenance of all mechanical and electrical plant, including water-tube boilers, conveying and handling plant, including steam, hydraulic and electric cranes, and also repair shops.

It is essential that applicants should possess, in addition to general engineering experience, a knowledge of electrical engineering and the ability to organize labour. Salary £550–£650 per annum and Pension Fund in operation.

Applicants should be not more than 45 years of age and should state their Training, Experience and Qualifications, and their position with regard to the Essential Works Order, to No. 9442, "GAS JOURNAL," 51, High Street, Esher, Surrey.

CITY OF LEEDS

(GAS DEPARTMENT)

APPLICATIONS are invited for the JOINT POSITION of SUPERINTENDENT of the Meter, Stove and Fittings Department and ASSISTANT SUPERINTENDENT of the Street Lighting Department.

The post is subject to the provisions of the Local Government Superannuation Act, 1937, and the successful applicant must pass a medical examination.

Commencing Salary £600 per annum, plus cost of living bonus, at present £59 16s. per annum, and the maximum Salary £750 per annum, plus cost of living bonus; subject to deductions for superannuation.

Applications, stating Age, Training, previous Experience, Certificates held, together with position regarding National Service Acts and Essential Works Order, and accompanied by *copies* of three recent Testimonials, addressed to the undersigned, must be delivered not later than Tuesday, July 10, 1945.

Canvassing in any form, either directly or indirectly, will be a disqualification.

Gas Offices, Market Hall, Leeds, 2. C. S. SHAPLEY, M.I.Mech.E., M.Inst.Gas E., M.Inst. F., Engineer and Gene Manager.

June 7, 1945.

MALVERN URBAN DISTRICT COUNCIL

APPOINTMENT OF GAS ENGINEER AND MANAGER

APPLICATIONS are invited for the appointment of GAS ENGINEER AND MANAGER, at a Salary of £600 per annum, rising by annual increments of £50 to a maximum of £750 per annum, plus temporary cost-of-living bonus (£59 16s. per annum).

Applicants must be members of the Chartered Institution of Gas Engineers, have a thorough knowledge and experience of the control and maintenance of gas-works plant (including Woodall-Duckham Vertical Retorts and Benzole Plant) and distribution and sales. Previous experience in the general administration of a gas undertaking is essential, and applicants must also be capable of preparing specifications and plans for extensions or alterations, and of supervising such work.

The appointment will be subject to the provisions of the Local Government Sueprannuation Act, 1937, and the successful candidate will be required to pass a medical examination.

Applications, stating Age, Qualifications and Experience, together with information as to position in relation to National Service Acts and Essential Works Order, and earliest date applicant could commence duty if appointed, accompanied by *copies* of not more than three Testimonials, must be delivered to the undersigned not later than Friday, June 29, 1945.

The Council House, Malvern. J. BULMAN, Clerk of the Council.

June 7, 1945.

GREAT YARMOUTH GAS COMPANY

ASSISTANT GAS ENGINEER

APPLICATIONS are invited for the appointment of ASSISTANT GAS ENGINEER to the above Undertaking at a commencing Salary of £365, with yearly increments of £15 to a maximum of £410 per annum, plus cost of living bonus, which is at present £59 16s. per annum.

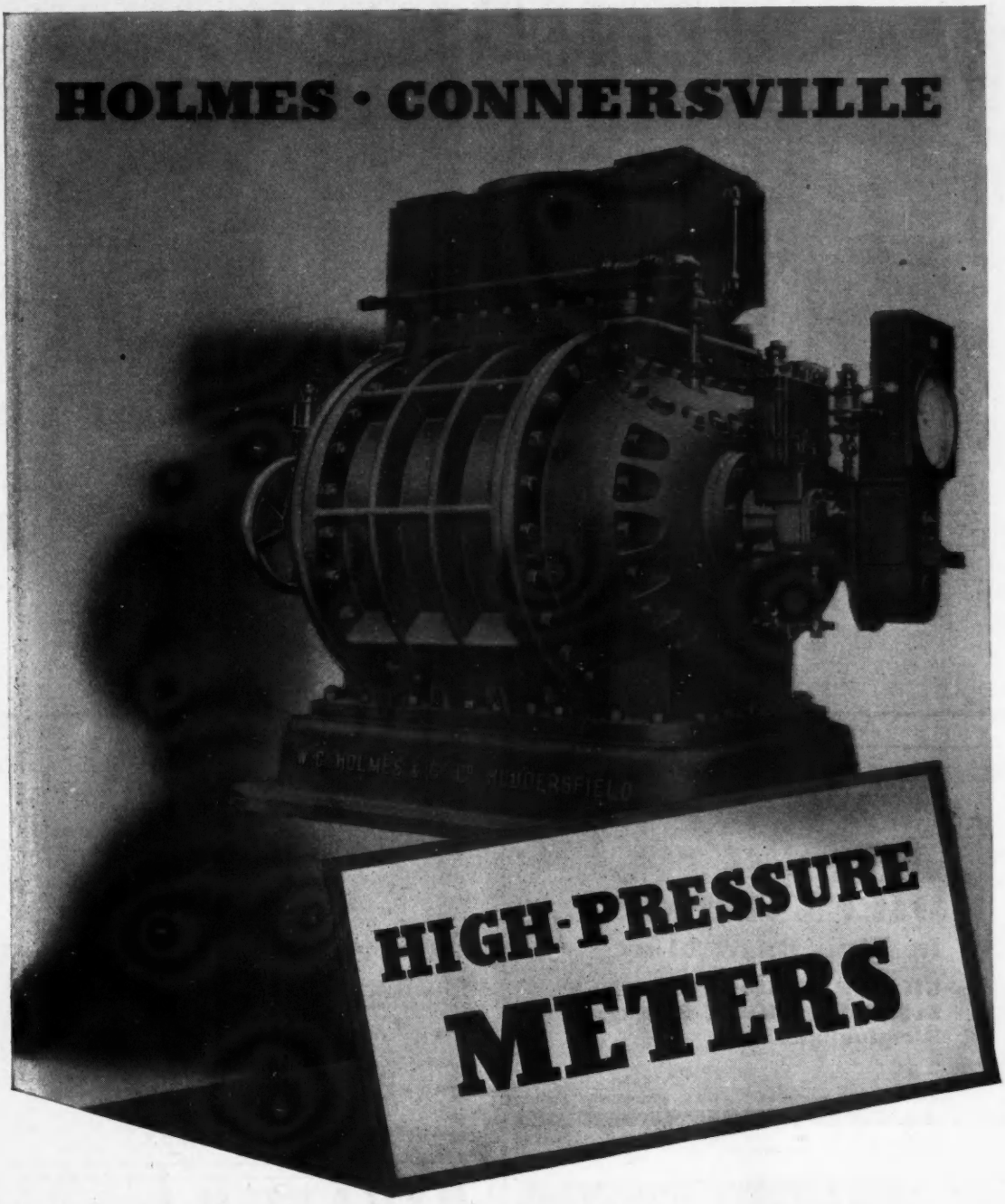
Candidates must be qualified Engineers, members of The Institution of Gas Engineers, hold the Higher Grade Gas Engineering Certificate, and have a thorough knowledge and experience of control and maintenance of Gas-works plant, including Benzole Recovery, Tar Distillation plant, and also be capable of drawing up specifications and preparing plans for extensions or alterations, and capable of acting as deputy to the Gas Engineer. Experience in gas distribution will be considered an advantage.

Applications, stating Age, Experience and Qualifications, together with *copies* of three recent Testimonials, must reach the undersigned not later than June 26, 1945.

The Ministry of Labour and National Service have given permission under the Control of Engagements Order, 1945, for the advertisement of this vacancy.

40, King Street, Great Yarmouth. JOHN H. GREENACRE, Managing Director and Engineer.

HOLMES · CONNERSVILLE



These Meters are suitable for Gas at pressures up to 75 lbs. per sq. inch

FOUNDED 1836 HOLMES HUDDERSFIELD

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Telephones: Huddersfield, 5280 : LONDON, Victoria, 9971 : BIRMINGHAM, Midland, 6830

C 239

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Just as the asbestos suit is man's reply to the menace Fire, so the "A & M" Meter is the most up-to-date answer to the bogey Inaccuracy. The protection afforded—in the one instance to life and property and in the other to the integrity of Industry and Business—is obvious. It is equally obvious that

your *protection* is the

"A&M" METER

ALDER & MACKAY LTD., NEW GRANGE WORKS, EDINBURHG, 11.

If you need

PRESSURE DIECASTINGS
in Zinc Base Alloy

enquire of **GILLS PRESSURE CASTINGS**
215 Tyburn Road, Erdington
Birmingham, 24
Telephone EAST 1008

Formerly Die-Casting Department of H. GILL STAMPINGS Limited

METRONIC
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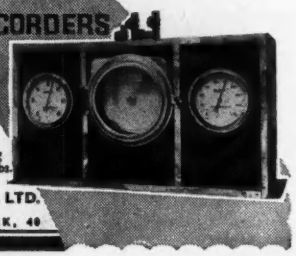
INDICATORS
RECORDERS



A comprehensive range of pressure and flow measuring instruments, all operated by modified U tubes for sheer sensitivity. Flow Indicators and Recorders are driven by the latest METRONIC Ring Balance movement carried on Floating Ball Journals, which supersede knife edges.

A particular interest is taken in devising special apparatus for "out-of-the-ordinary" jobs.

THE METRONIC INSTRUMENT CO. LTD.
SPECIALISTS IN FLUID MEASUREMENT
196, GROVE LANE : SMETHWICK, 40

"Everything for Safety Everywhere."

SMOKE HELMETS. GAS MASKS
BREATHING APPARATUS OF ALL PATTERNS.
OXYGEN RESUSCITATING APPARATUS.
FIRE EXTINGUISHERS. FIRST-AID OUTFITS.
SAFETY AND PROTECTIVE APPLIANCES OF ALL DESCRIPTIONS.

SIEBE, GORMAN & CO. LTD.,
WESTMINSTER BRIDGE ROAD, LONDON, S.E.1.
Telegrams "Siebe, Lamb, London" Telephone No. Waterloo 6071

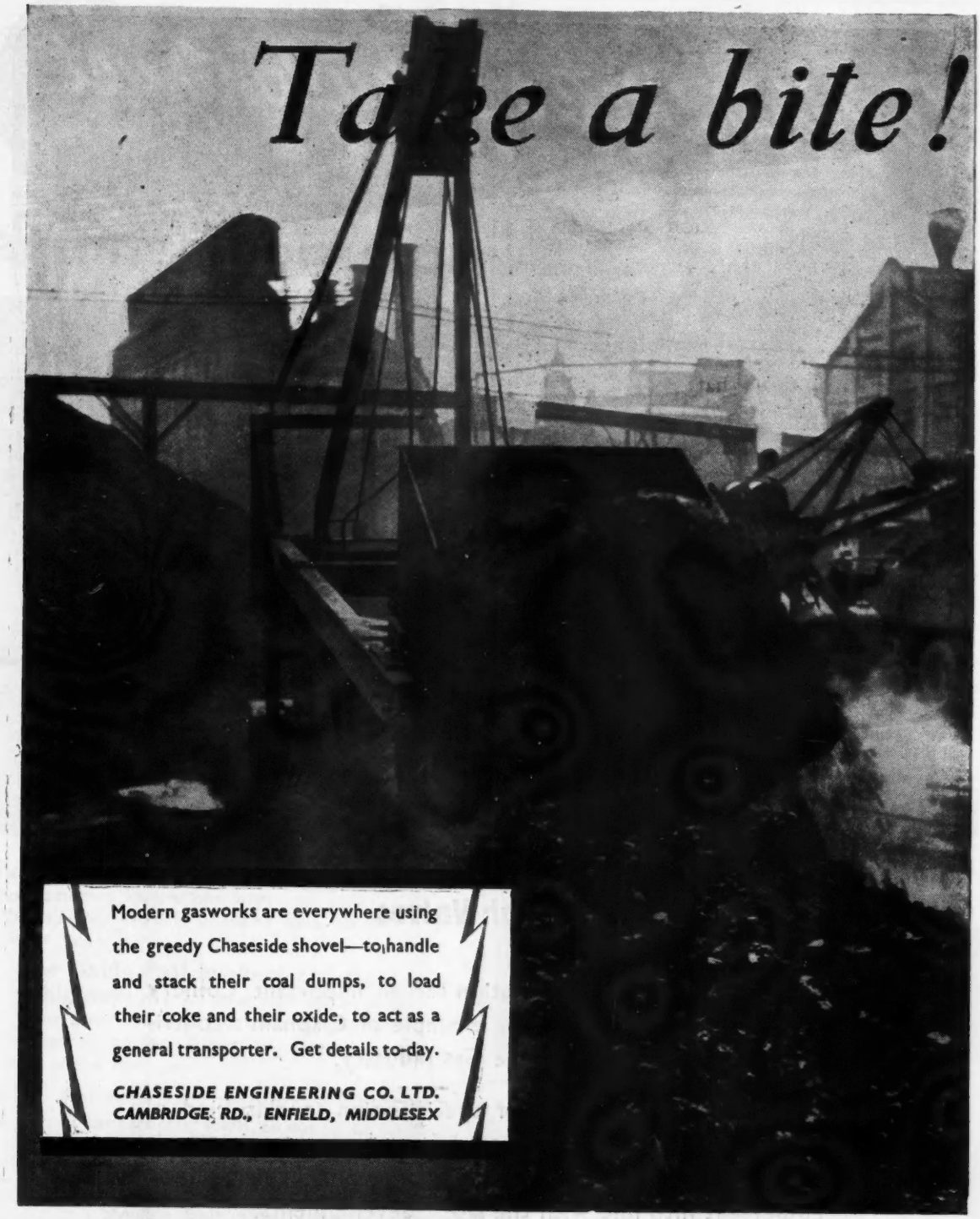
"WASK" HIGH TENSILE MALLEABLE PIPE FITTINGS

OVER 4000 SIZES
INDIVIDUALLY AIR TESTED
STANDARD TAPER THREADS
FULL THICKNESS THROUGHOUT

Fit and forget!

MADE BY THE MAKERS OF—
"Wask" Up and Down Patent Lamp Suspenders, the NON-DISCONNECTING raising and lowering gear.

WALTER SLINGSBY & CO., LTD.
NEW DAM WORKS . . . KEIGHLEY
'Phone: Keighley 3749 (2 lines). Grams: Malleable Keighley



Modern gasworks are everywhere using the greedy Chaseside shovel—to handle and stack their coal dumps, to load their coke and their oxide, to act as a general transporter. Get details to-day.

CHASESIDE ENGINEERING CO. LTD.
CAMBRIDGE RD., ENFIELD, MIDDLESEX

CHASESIDE

Rip into it with a—

AS/CD131

Another Noteworthy Contract

PURIFIER INSTALLATION

Comprising 5 Purifiers 50′ x 40′ x 6′ deep with Clapham's Patent Triumph Valves

The erection of this installation for an important Colliery Company represents another example of Clapham's contribution to the progress of the Gas Industry.

Over one hundred years of specialisation in this kind of work is behind every Clapham job, and our organization is at your service at all times to co-operate in bringing your equipment into line with the latest developments.

CLAPHAM BROS. LIMITED

MAKERS OF GAS WORKS EQUIPMENT SINCE 1837

KEIGHLEY-YORKS - Tel: 2787-2788 - Grams: "Clapham Bros., Keighley."

Gunite is PROTECTION against abrasion

Gunite—concrete applied by air pressure—has numerous applications where its great density and extreme adhesion have particular value.

For lining coal bunkers and steel chimneys it is an ideal material, possessing great resistance to corrosion and protecting steel-work from the abrasive action of the raw coal.

For repairing reinforced concrete it has particular merit, as, due to the method of application, a uniform density and adherence is obtained in whatever place the Gunite is applied, thus overcoming the common fault with hand-placed methods.

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'Phone: Victoria 7877 & 6275
'Grams: Prufcrete, Phone, London

HUMIDINE
NON-SETTING PAINT

Used by the leading Gas Companies for the protection of the lower plates and cuppings of gasholders. The most efficient anti-corrosion paint in existence

HUMIDINE NEVER DRIES, NEVER CRACKS AND IS ABSOLUTELY IMPERVIOUS TO WATER

OXY-GRAFITE PAINT

For the Protection against the corrosive effects of acid and alkaline fumes on all iron and steelwork of gasworks, Aspinalls Oxy-Grafite Paint is unsurpassable

Full particulars and prices on request from the sole proprietors

ASPINALLS (PAINTS) LIMITED
CARLETON — SKIPTON — YORKS

ONX FIRE CEMENT

ANOTHER GAS COMPANY states on Nov. 27th, 1944:

'We are pleased to report on the satisfactory way your special Patching Cement stood up on a repair to the front wall of one of our settings. The repair was round the producer charging hole, having to stand up to the worst conditions being subject to the heat from the setting, abrasion of hot coke, and cold quenching water, and is still standing up well after three months.'

Sets like a ROCK under heat
ONX 'FUDEX 83' BRAND For RETORTS
A.L.CURTIS Westmoor Works CHATTERIS Cambs.

E. E.
JEAVONS & CO. LTD.
TIPTON
DISTRIBUTION SPECIALISTS
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HOLDEN & BROOKE LTD
SIRIUS WORKS MANCHESTER 12

"TULLY" GAS

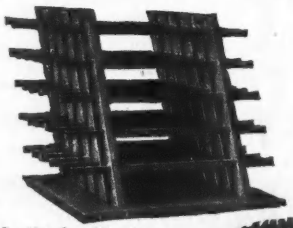
THE IDEAL GAS SUITED TO ALL MODERN NEEDS

ECONOMICAL IN USE AND CHEAP TO PRODUCE

THERE ARE SEVERAL HUNDRED "TULLY" PLANTS IN USE AND NUMEROUS GAS WORKS ARE SENDING OUT ALL "TULLY" GAS

Sole Makers and Patentees:

TULLY, SONS & CO., LTD.
MILLGATE,
NEWARK-ON-TRENT, ENGLAND.



Inclined Hurdles (Light or Heavy Type) with Bottom Flat Grids.

Scrubber Grids.

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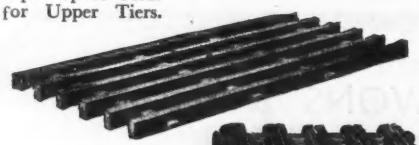

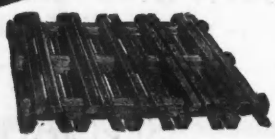

Patent Double-Barred Grids.

Flat Grids for Bottom Tiers (Closed Ends).

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Embody the latest improvements—are of the very best quality—and are in use extensively throughout the Kingdom

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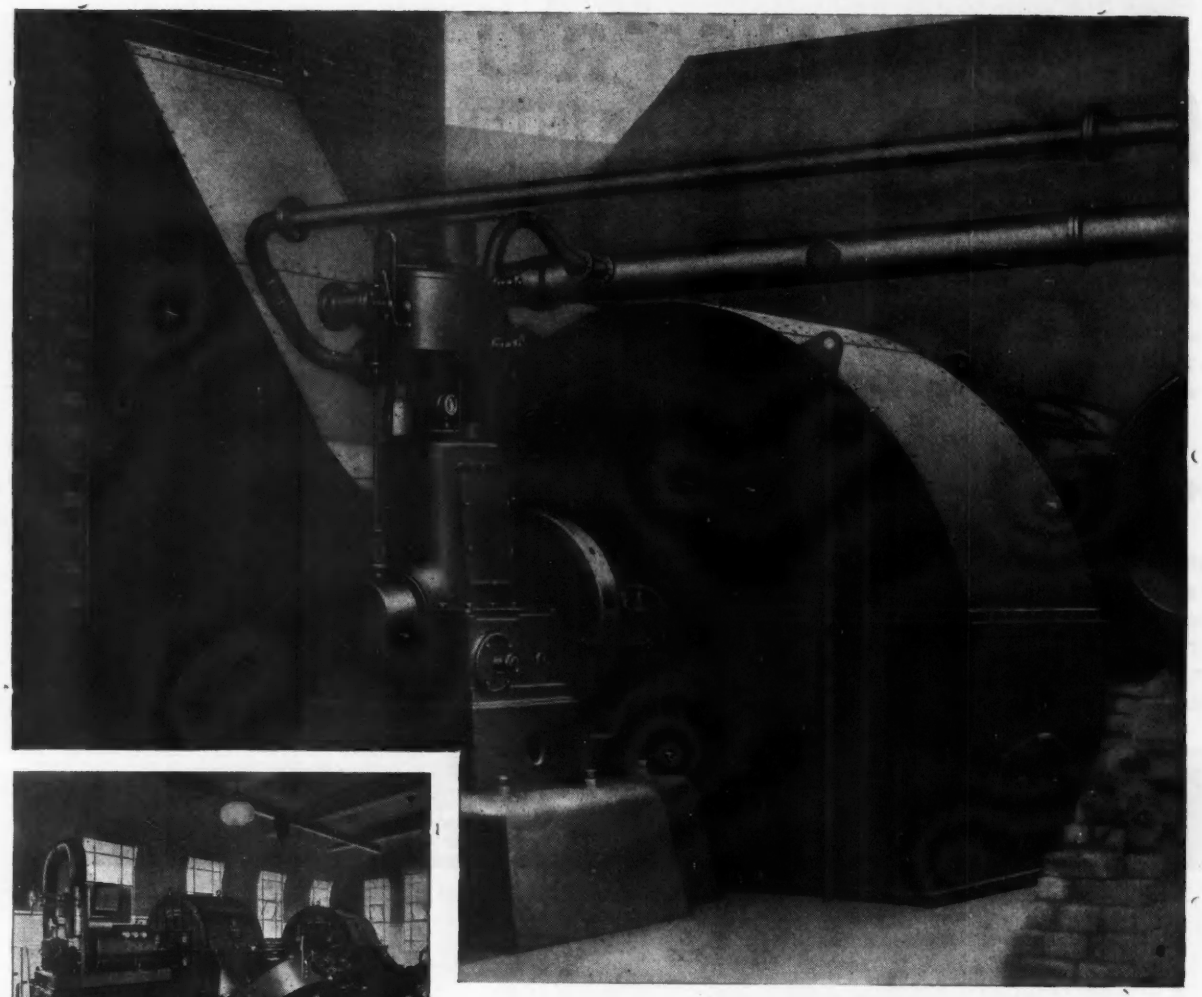
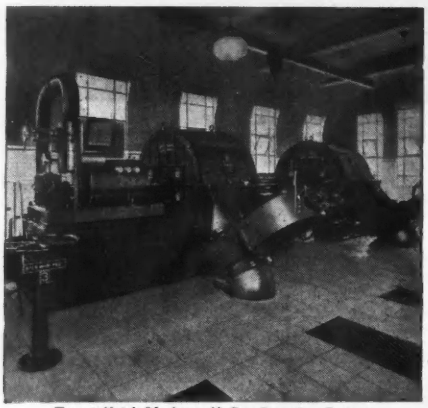


"Keith" Centrifugal Fan providing induced draught to boiler fires.



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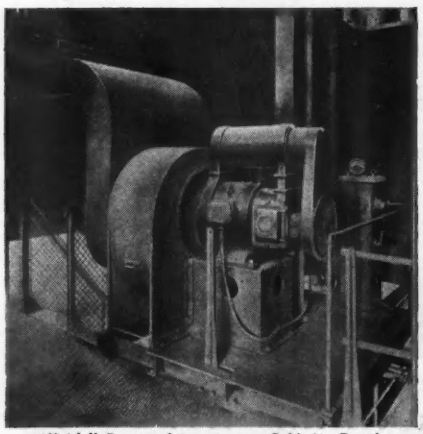

"Keith" Fan supplying air to a Cold Air Douche Plant at a Gas Works.

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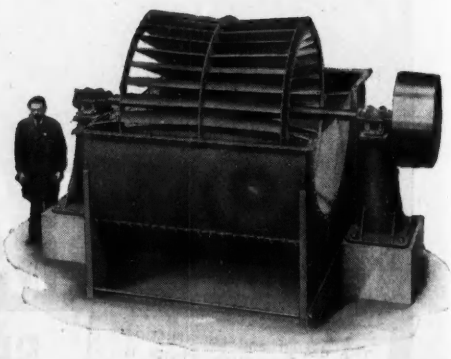

Large belt-driven double-inlet "Keith" Fan with top casing removed.

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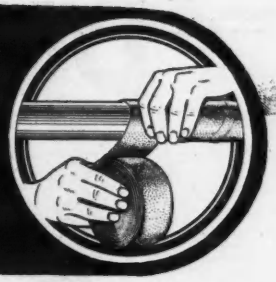

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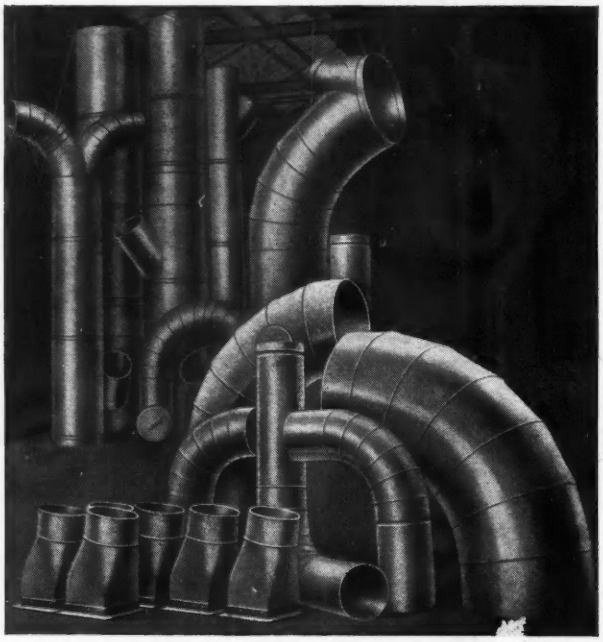

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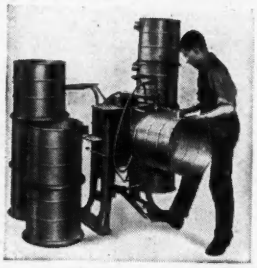

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